

NON-LINEAR ANALYSES
IN ENGLISH HISTORICAL PHONOLOGY

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Abstract

The proposals put forward in this thesis centre around two main objectives: firstly, to present synchronic analyses of the stress patterns of Old and Middle English (OE and ME); and secondly, through an examination of the suprasegmental structure of these early stages of the language, to propose a non-teleological account of the so-called English vowel length 'conspiracy' (Lass, 1974).

Chapter 1 serves as an introduction to the model of non-linear representation to be employed, namely metrical phonology. Chapter 2 looks at the evidence provided by the OE alliterative metre for determining primary and secondary stress in both morphologically simple and complex items, and considers the appropriateness of adopting the lexicalist hypothesis in an analysis of OE. The following chapter traces the development of the stress patterns from OE to ME considering in particular the influence of Romance loan words. It is suggested that in late ME there existed two rules for assigning stress: one for the native and another for the Romance section of the vocabulary, the former being morphologically, and the latter phonologically conditioned. It is claimed that by adopting a level-ordered approach to stress assignment in the lexicon, one can capture the development from the situation in OE where all affixation takes place after the application of the stress rule, to the two class system of affixes proposed for Modern English by Siegel (1974).

In Chapter 4, each of the vowel lengthening and shortening processes which make up the 'conspiracy' is looked at separately. It is then proposed that these changes share a common domain - the prosodic foot - and that they may be given a unitary account in terms of the tendency within such isochronous feet for an inverse proportionality between the duration of the stressed syllable and the number of syllables in the foot.

Table of Contents

Chapter 1 - Introduction	1
1.1.1 Syllabification	2
1.2.1 Metrical foot structure	20
1.3 Vowel length adjustments	34
1.4 'Cause' in historical linguistics	39
Chapter 2 - Old English	43
2.1 OE syllable structure	43
2.1.1 The light/heavy distinction	44
2.1.2 Ambisyllabicity in OE	62
2.1.3 Geminate clusters	70
2.2 Stress assignment	77
2.2.1 Primary stress	77
2.2.2 Secondary stress	108
2.2.3 Compound stress	130
2.2.4 Inflectional affixes	152
Chapter 3 - Middle English Stress	157
3.1.1 Halle and Keyser's account of ME stress	157
3.1.2 An alternative analysis and the 'countertonic principle'	162
3.2.1 Early Modern English	187
Chapter 4 - The English Vowel Length 'Conspiracy'	198
4.1 Homorganic lengthening	199
4.2 Shortening before clusters and in trisyllables	209
4.3 ME open syllable lengthening	217
4.4 The length 'conspiracy'	235
4.5 The 'inverse proportionality' hypothesis	242
Appendix - Footnotes	278
Bibliography	288

Chapter 1

Introduction

1.1

Until recently,¹ most of the formal diachronic studies of English phonology have been based within a framework such as that presented by Chomsky and Halle (1968; henceforth SPE), and have relied on segmental expressions of their observations with the result that many valuable generalisations have gone uncaptured. It has been shown (Hoard 1971, Hooper 1972, Vennemann 1972, Anderson 1975, Anderson and Jones 1977) that certain diachronic and synchronic phonological processes are conditioned by the position of the segment within the syllable, and also that various 'prosodic' phenomena such as stress, tone and possibly vowel length have non-arbitrary groupings of segments as their domains (Lehiste 1970, Wang 1967, McCawley 1968, Firth 1948, Goldsmith 1976).

While there have been a number of proposals for a non-linear (or suprasegmental) analysis of Modern English (ModE) stress which takes account of such groupings (Lieberman and Prince 1977, Selkirk 1980, Kiparsky 1979), no such treatment has been applied to the study of the stress patterns of earlier stages of the language. A large part of this thesis will be devoted to the formalisation of Old English (OE) and Middle English (ME) stress contours within the theoretical assumptions of a non-linear model of representation, namely Metrical Phonology (first developed in detail by Liberman and Prince 1977; henceforth LP). A characterisation of stress patterns in such terms necessarily involves an analysis of words into syllables and larger prosodic units, feet. Once the suprasegmental organisation of these early stages of the English language have been established, we will be in a position to examine other phonological processes, like vowel lengthening and

shortening, from a different perspective and consider in particular whether the changes of the so-called vowel length 'conspiracy' (Lass 1974) may be viewed as prosodically motivated adjustments. I will argue in Chapter 4 that this is in fact the case and that these changes take place within the common domain of the prosodic foot.

As justification for the introduction of suprasegmental groupings such as the syllable and foot into phonological theory has already been given by many linguists (see, for example, the references given above), I do not propose to go into any details here. The first part of this chapter will outline the model of non-linear structure which I intend to use. It will then present a brief description of the diachronic lengthening and shortening processes which are to be examined within this framework, followed by a short mention of some of the earlier accounts which have been offered by way of a unitary explanation for the changes. This necessarily cursory discussion will be taken up and developed more fully in Chapter 4.

1.1.1 Syllabification

I turn firstly to the process of syllabification: the way in which syllable boundaries are determined and the hierarchical representation of the internal structure of an English syllable.

Earlier proposals of syllable boundary insertion by means of a universal rule (see, for example, Hooper 1972) have now generally been abandoned for a more language-specific approach based on phonotactic constraints. Vennemann (1972) presents one version of such a method of syllable boundary assignment in his Laws of Initials and Finals. These Laws require that all syllable-initial and syllable-final clusters also be acceptable word-initially and finally.

The actual syllabification which such a view of medials entails can be either 'minimalist' or 'maximalist':

(1.1) a. initial maximal, final minimal

[mu][sic] [ban][da][na]
 ' 1 2 2 ' 1 2 2 3 3

b. initial minimal, final maximal

[mus][ic] [band][an][a]
 ' 1 2 2 ' 1 2 2 3 3

c. initial maximal, final maximal

[mu[s]ic] [ban[d]a[n]a]
 ' 2 1 2 ' 2 1 3 2 3

The 'minimalist' approach represented by (1.1 a. and b.) allows the medial cluster to be maximal in only one direction so that the end of one syllable always coincides with the beginning of the next. Of these two possible syllabifications the first - often referred to as the maximal onset principle - is more generally adopted (Pulgram 1970, Vennemann 1972, Hooper 1978, Selkirk 1982, Hoard 1971). In the 'maximalist' (1.1 c.) form of syllabification, the syllable boundaries are assigned in such a way as to make each syllable of the maximal extent compatible with the constraints on initial and final clusters. In this way, syllable boundary overlap is allowed for. Anderson and Jones (1977) argue for this view of pre-stress syllabification claiming that ambisyllabicity captures the generalisation that "morphemes are made up of segments grouped into syllables, and that the form of medial clusters is thus a function of the combination of a final and an initial" (p. 107).

The choice between these three logical possibilities for syllabification may be facilitated by certain experi-

mental evidence. Fallows' (1981) results indicate that in English the maximal onset is generally observed (particularly in a stressed syllable) and that the occurrence of ambisyllabicity is restricted by factors such as stress and phonotactics. She suggests that "ambisyllabicity may be a syllabification strategy imposed when two rules are in conflict, as a way to satisfy both" (p. 315). In the case of an intervocalic consonant after a short stressed vowel as in fæder, the maximal onset principle will syllabify it with the second syllable while a phonotactic constraint on the non-occurrence of short stressed final vowels will claim the consonant as a coda to the first syllable. It would appear that it is in such contexts that ambisyllabicity is to be found. Fallows claims that any theory based strictly on one principle of syllabification is inadequate and suggests that perhaps an integration of the maximal onset and ambisyllabic approaches would best reflect the experimental findings. I propose in this thesis to adopt an underlying maximal onset analysis for the syllabification of Old and Middle English with a possible surface re-syllabification which would be sensitive to such features as stress (thereby allowing for some surface ambisyllabicity). A detailed discussion of, and justification for, this proposal will be given in Sections 2.1 ff.

While it is generally accepted that phonotactic constraints play an important part in the determination of syllable boundaries, it has also been claimed (e.g. Vennemann 1972, Hooper 1976, Anderson and Jones 1977) that a theory of the syllable should incorporate these facts into a more explanatory framework that would capture the relationship between segment type and syllabification. These linguists call on the traditional notion of the existence among segments of a strength or sonority hierarchy which reflects the suitability of various consonant classes for

positions of relative closeness to the syllable peak. Hooper (1976) for example, proposes the following hierarchy (which may be compared with similar earlier proposals like those by Jespersen (1926) and Saussure (1916)):

- (1.2)
- | | | |
|----------|---|-----------|
| sonority | | obstruent |
| | - | nasal |
| | - | liquid |
| | - | glide |
| | v | vowel |

The dominant part of every syllable is the nucleus which comprises the most sonorous segment - usually a vowel. Sonority decreases from the nucleus to the margins of a syllable. The increase in sonority from a syllable initial segment to the nucleus (or peak), followed by a gradual decrease to syllable final position reflects the characteristic mirror-image clustering of initial and final consonant groups, e.g., bard - drab; pounce - snap; cream - ark.

Provided that the sonority hierarchy can be independently motivated (i.e., without reference to syllable structure), it furnishes an explanation for the phonotactic constraints on segments. Foley (1970) shows that it can be justified on the basis of historical sound changes like the consonant shifts in various Indo-European (IE) languages. For example, in the Spanish consonant shift long stops are shortened, short stops are voiced, voiced ones become continuants and continuants are deleted:

- (1.3)
- | | | |
|------|-----|-----|
| /tt/ | --> | /t/ |
| /t/ | --> | /d/ |
| /d/ | --> | /ð/ |
| /ð/ | --> | ϕ |

ð	d	t	tt	
<hr/>				→
1	2	3	4	strength

Strength is phonetically defined as resistance to airflow, i.e., the strongest segment is that whose articulation offers the most resistance to airflow. The hierarchy for strength then, is the opposite of that for sonority because the greater the resistance to airflow, the smaller is the output of acoustic energy which characterises sonority. The strongest segment therefore, is also the least sonorous. The consonant shift described above can thus be seen as a weakening process in which each affected segment moves one step down the hierarchy of strength. There are numerous examples of phonological strengthening and weakening processes which move in a systematic way along the hierarchy thereby providing justification for positing its existence. (For a discussion of other such processes, see Foley (1970), Lass and Anderson (1975), Lass (1984).)

A careful examination of the phonotactic constraints of a language reveals not only a linear arrangement of segments so that they reflect the sonority hierarchy in the manner described above, but also the existence of a syllable-internal structure such that a syllable can be said to have three identifiable parts (onset, nucleus and coda) with separate immediate constituents. Thus Pike (1967: 386-7) points out

The possibility of substitution of one phoneme for another in a particular slot in the margin, for example, is likely to be more dependent upon the particular phonemes manifesting other slots in that margin than it is by the particular phonemes manifesting the nucleus of such syllables. I.e. if a formula CCV is manifested by /s/ in the first consonant slot, and the nucleus slot is filled by the phoneme /a/, the list of phonemes which will fill the second consonant slot are more likely to be controlled by the presence of the /s/ than they are by the presence of the

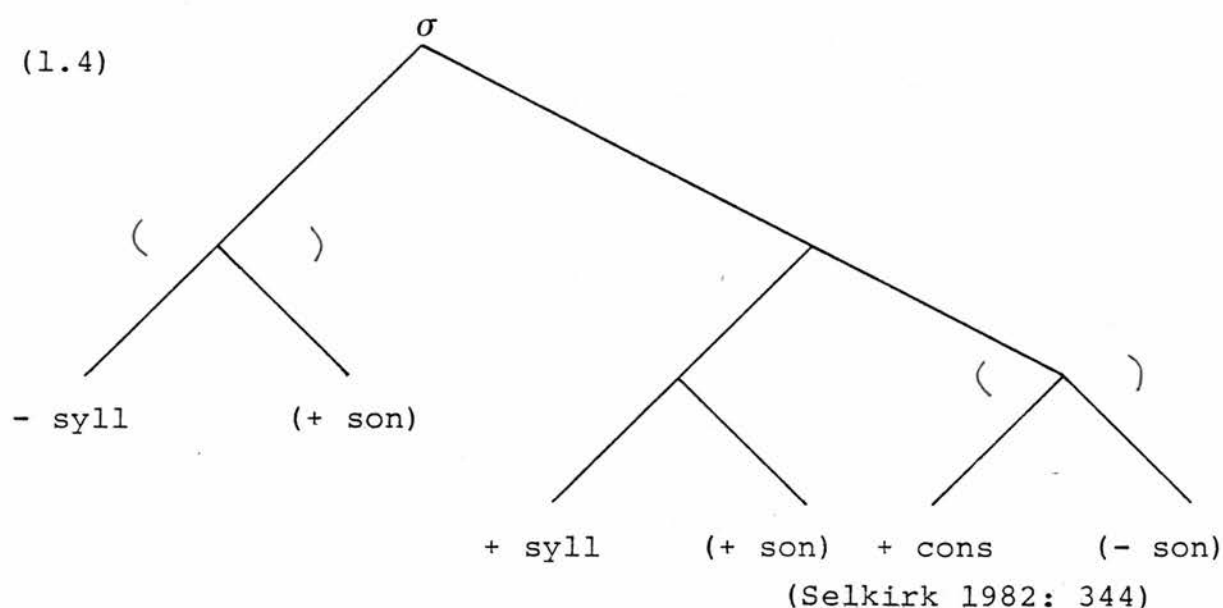
/a/..... Such considerations indicate that a closer relationship exists between the two consonants than exists between either consonant and the vowel.

The further grouping together of the nucleus and coda into a rhyme constituent is argued for on the grounds that it serves as a phonological unit with respect to the determination of suprasegmental phenomena such as stress and the characterisation of the light/heavy syllable distinction. It is worth noting, however, that within the framework of CV Phonology (Clements and Keyser 1983) it is claimed that only the categories of "syllable" and "nucleus" are referred to by phonological rules and that "onset" and "coda" are redundant in the characterisation of a well-formed syllable. Within this model, "nucleus" is defined as constituting a vowel plus one other tautosyllabic segment, either vocalic or consonantal. Such a definition does not permit their "nucleus" category to be collapsed with either our nucleus (which contains only vocalic elements) or our rhyme (which may have more than one segment following the syllabic). While the CV classification equally characterises the distinction between light and heavy syllables, it is not clear whether it would be able to capture as efficiently as a model which uses a rhyme constituent, the interdependence between syllable and foot weight (c.f. Chapter 4) where the permitted weight of a syllable in a certain foot configuration may stretch beyond the structure of the nucleus. Nor does the CV analysis throw any light on the poetic traditions of rhyme and alliteration which make reference to the syllable sub-constituents of rhyme and onset respectively. I believe that this area requires further investigation. The analysis adopted in this thesis makes use of the rhyme as a sub-constituent of the syllable and further discussion of the characterisation of the light/heavy distinction in OE in the light

of such a model will be presented in Sections 2.1.1 ff.

1.1.2

Based on arguments such as those presented by Pike (1967), Kuryłowicz (1948) and Newman (1972), a number of linguists (notably Selkirk 1980, 1982, Kiparsky 1981, McCarthy 1979) take the syllable to be an independent phonological constituent whose hierarchical internal structure may be represented on a tree. The actual labelling of the nodes of such a tree is a purely notational problem, but the alternatives are worth mentioning briefly. Firstly, each node may be appropriately labelled 'syllable', 'onset', 'nucleus', 'coda' and 'rhyme'. There does not, however, seem to be much evidence in support of such an approach (except perhaps for the constituent 'syllable' - see Selkirk, 1980). The second option would be a syllable template such as that proposed by Selkirk (1980, 1982) the function of which would be to "encode the gross characteristics of syllable structure".



The characteristics reflected by this structure are "(i) the composition of the syllable in terms of segment types identified by the major class features... (ii) the order

of these segment types within the syllable, (iii) the structural relations between the segment types ..., and (iv) the optionality of segments or groups of segments (= constituents) within the syllable." (1982: 344-5). The template above is not restrictive enough, however, and must be used in conjunction with a set of phonotactic constraints which Selkirk proposes be expressed in terms of filters. Additionally, reference must be made to some form of syllabification rule - in this case the maximal onset principle discussed earlier.

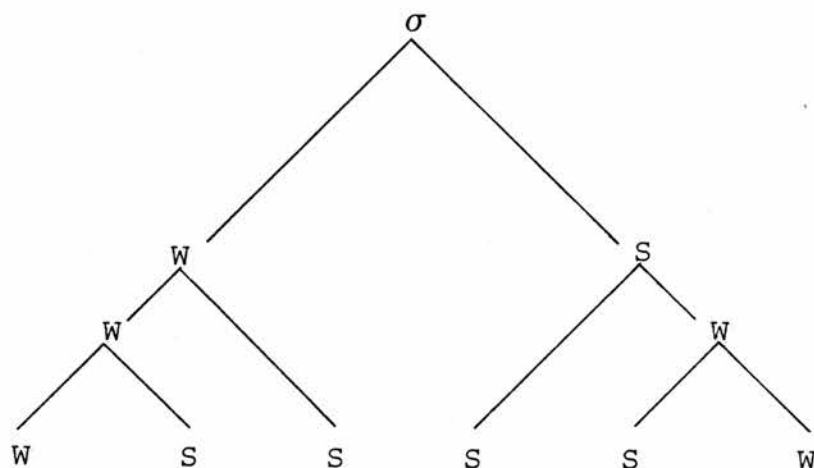
A third approach is presented by Kiparsky (1981) who takes the syllable template to be a relational structure represented by metrical trees of the type introduced by LP. Kiparsky proposes a universal template which defines relative prominence on segments according to a weaker version of the prominence relations proposed by LP:

- (1.5) The beat of a subtree labelled S is stronger than the beat of its sister subtree labelled W.

(Kiparsky 1981: 245)

The template matches the relative sonority of the segments according to the universal hierarchy already discussed.

- (1.6)



The prominence within the syllable is seen to decrease from the nucleus to the margins and as such is a direct interpretation of the sonority hierarchy. Thus "sonority is simply the intrasyllabic counterpart of stress" (Kiparsky 1981: 250). The relevance of this last statement will become clearer in Section 1.2.1 when we look at the representation of stress patterns within the same notation.

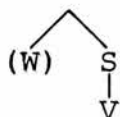
Kiparsky points out that this notation reflects the unmarked

status of CV syllables since $\begin{array}{c} \diagup \quad \diagdown \\ W \quad S \end{array}$ is the first expansion of the syllable node and therefore the simplest syllable structure. It follows from this template that while

VC syllables simply have an empty onset², $\begin{array}{c} \diagup \quad \diagdown \\ W \quad S \\ \quad \quad \diagdown \quad \diagup \\ \quad \quad S \quad W \\ \quad \quad | \quad | \\ \quad \quad V \quad C \end{array}$,

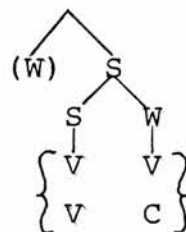
CV syllables do not have an empty coda $\begin{array}{c} \diagup \quad \diagdown \\ W \quad S \\ | \quad | \\ C \quad V \end{array}$. This relational approach to syllable structure can likewise allow us to give a formal account of the distinction between light and heavy syllables. I argue in Chapter 2 that a heavy syllable in OE has a branching rhyme i.e., comprises VC or VV. (I follow the proposal made in Lass and Anderson (1975) and adopted by many others, to treat long vowels and long diphthongs as sequences of two (identical in the case of long vowels) vocalic segments). A light syllable, however, has a non-branching rhyme.

(1.7) a.



light syllable

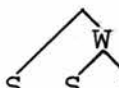
b.



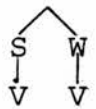
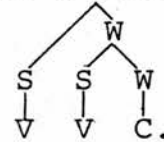
heavy syllable

Kiparsky does not actually discuss the treatment of long

vowels, but I assume that since they behave as heavy syllables in the same way as VC, they will be given the representation in (1.7 b.). This leaves the question of the representation of VVC sequences. Again the author does not address this problem, but a direct mapping of the template in (1.6) would produce an analysis

like that for VCC, i.e., . This creates a slight anomaly, however, in that different structural representations are given to long vowels depending on whether they are followed by a syllable boundary or by a consonant in

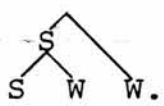
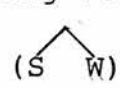
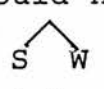
the same rhyme:

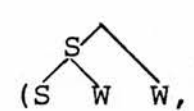
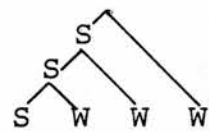

versus


Notice also that a structure like the latter does not reflect the naturalness of the vowel shortening which may take place in these contexts because such a process would involve the deletion of an S node, whereas one would expect the weaker W node to be lost first. Further, it claims that there is a closer relationship between the second element of the vowel and the following consonant than between the two vocalic segments. This is clearly not the case as both vocalic elements are part of the nucleus even though only the first (in English) forms the syllabic peak.

Clements and Keyser (1983) criticise the binary branching tree hypothesis on the grounds that a) there are a number of possible analyses for any sequence of three or more segments, and b) that it cannot provide a "uniform characterisation" of the notions heavy and light syllable due to the different structures which would be assigned to VV ~ VVC and VC ~ VCC sequences (as described above) under a direct mapping of Kiparsky's template. The first objection is immediately removed by the adoption

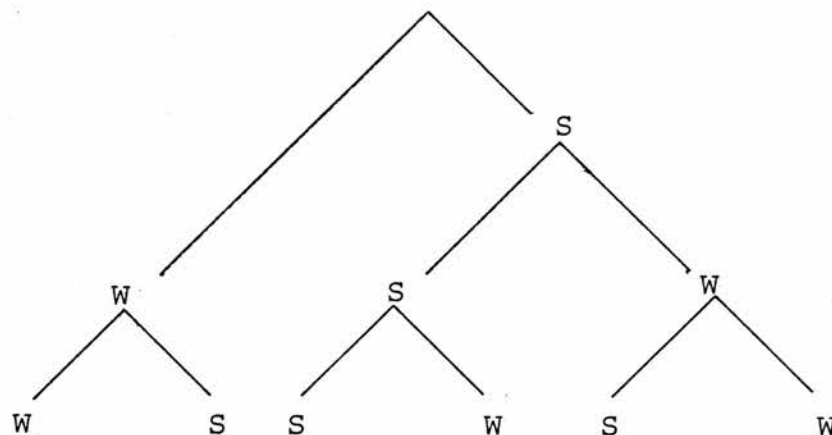
of a template approach: such a template specifies one well-formed mapping of syllable structure. Their second objection, together with the problems raised above, is answered if we adopt an analysis³ in which sequences of

VVC and VCC have the structure . Under such a proposal, all long vowel sequences would be assigned the same structure  and a heavy syllable would have the characterisation given in (1.7 b): if  represents a heavy structure, then anything with more

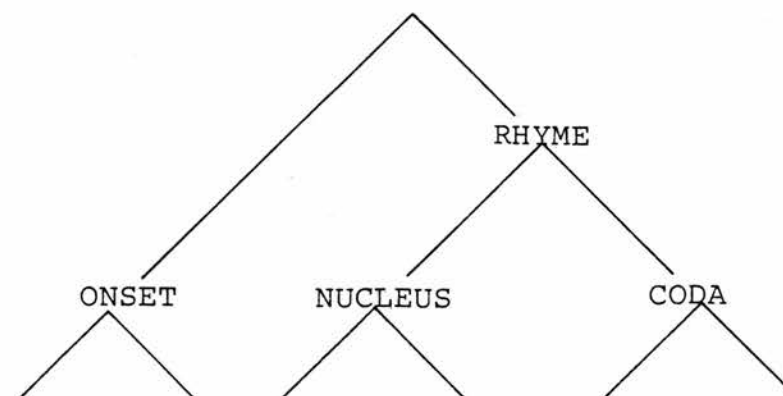
terminal elements ,  would clearly also be heavy (or over-heavy).

I am not, however, advocating the adoption of a template like that suggested by Selkirk (1982), even though her template - given in (1.8 a) - would produce an identical analysis for VVC.

(1.8) a.



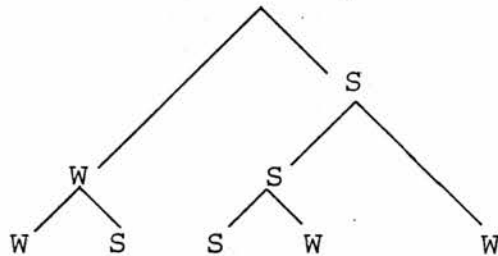
b.



The template in (1.8 a) maintains the internal constituency of the syllable, but rather than labelling each sub-constituent node as in (1.8 b), it defines the relationship between the nodes in terms of relative prominence as Kiparsky does. A template such as (1.8 a), however, is overspecified because any second consonant in the coda of an English syllable will always be 'extrametrical' (Kiparsky, 1981) in that it may violate the sonority hierarchy and is necessarily [+ coronal]. This second consonant is therefore predictable from the phonotactic constraints and need not form part of the "core" of a syllable, but can be treated as an "affix" (c.f. Fujimura and Lovins, 1978).

Taking this into account, we might wish to propose a syllable template of the form given in (1.9):

(1.9)



But this template too shows structure for an unnecessary number of terminal elements since any third segment in the rhyme is predicted by the sonority hierarchy to be less prominent (or less sonorant) than the one it follows. The purpose of a template of English syllable structure is to specify the correct prominence relations amongst the terminal elements. But in order for it to be non-redundant, it need only define the relationship between those nodes which may be ambiguous as to the correct labelling. Since any third segment in the rhyme of a syllable is predictably weaker than the segment which precedes it, this node does not require representation in the template. This would leave us with a single branch under the top S node.

One might wish to question whether, following the same argument of the predictability of strength relations from the sonority hierarchy, one cannot do without this branch too, and merely have a template of the form

$\begin{array}{c} \diagup \quad \diagdown \\ W \quad S \end{array}$. The labelling of a single branching node under S is in fact necessary for two reasons. Firstly, if in a sequence of three terminal elements in the rhyme the prominence between the first two were not defined as

$\begin{array}{c} \diagup \quad \diagdown \\ S \quad W \end{array}$, then there would be no way of determining whether the structure to be assigned should be

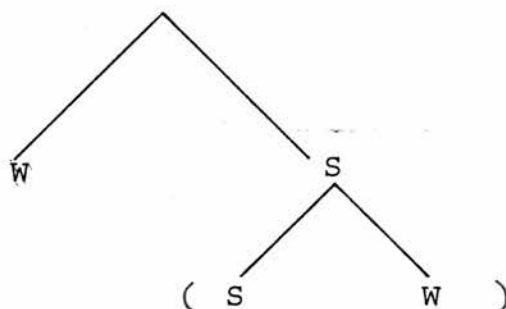
$\begin{array}{c} \diagup \quad \diagdown \\ S \quad \quad \diagdown \\ S \quad W \quad W \end{array}$ or $\begin{array}{c} \diagup \quad \diagdown \\ \quad \quad \diagdown \\ S \quad S \quad W \end{array}$ (c.f. Clements and Keyser's criticism discussed above). Secondly, although the sonority hierarchy would predict the correct $\begin{array}{c} \diagup \quad \diagdown \\ S \quad \quad \diagdown \\ S \quad W \end{array}$ structure for a VC sequence, it could not do so for a VV sequence - each of the morae in a geminate (long) vowel would have the same degree of sonority.

Similarly, because prominence within the onset is also determined by the sonority hierarchy, no branching of the onset need be defined on the template. Onset clusters in English consist of at most two segments, the first of which is weaker than the one closer to the syllable peak. The only exception to this restriction on the number of consonants in the onset is the case of initial /s/ followed by a plosive, e.g., /sp-/, /spr-/, /spl-/, /skr-/, etc. Furthermore, such clusters violate the sonority hierarchy in that the more sonorous /s/ is further from the peak than the less sonorous plosive. Should our syllable template then be extended to account for this unusual behaviour? In the face of the very restricted occurrence of such onset clusters, their behaviour with respect to the sonority hierarchy, the fact that they act ambiguously with respect to syllabification in OE (c.f. Section 2.1.2.2) and are idiosyncratic with regard to OE

alliteration conventions, I do not feel it necessary to modify the syllable template solely on their account. Selkirk (1982), following Fudge (1969) and McCarthy (1977), points out that in both onset and coda position such /s/ plus obstruent clusters may only occur where a single obstruent would be allowed. She suggests that the special status of such clusters may be accounted for by means of an "auxiliary template" which specifies that /s/ plus obstruent may fill the slot of a single obstruent in the main syllable template. Although this is an attractive proposal, in effect it amounts to nothing more than a phonotactic constraint and does not resolve our particular problem of the representation of prominence relations between the nodes.

Phonotactic constraints like this and others specifying the clustering properties of segments must be stated in the grammar. Since I shall suggest that all pre-stress syllabification takes place in the lexicon, these constraints must also be found there. Phonotactic constraints may be expressed in terms of well-formedness conditions or collocation restrictions (Fudge 1969; Selkirk 1982) on syllable structure, or alternatively may take the form of filters. I do not intend to discuss the various alternatives here, and take no firm position on the matter.

Let us return to the characterisation of our syllable template. I propose that it take the form given in (1.10) below. Any additional segments will be assigned metrical structure in accordance with the observations encoded in the sonority hierarchy and the various phonotactic constraints.

(1.10) Syllable Template

Notice that only those features which affect the prosodic behaviour of a syllable (i.e. the difference between a light and heavy syllable) are represented in the template. One drawback of such an approach is that the notion of a coda as a separate subconstituent of the rhyme is not captured. Such a distinction is not relevant to the analyses to be presented in this thesis so I shall not dwell on the matter; however, it is clear that further research into this area is needed.

1.1.3

Let us now examine how the template in (1.10) would function in conjunction with our rules of syllabification. Recall firstly that our syllabification is based on the maximal onset principle which may be stated⁴ as follows:

(1.11) Maximal Onset Principle

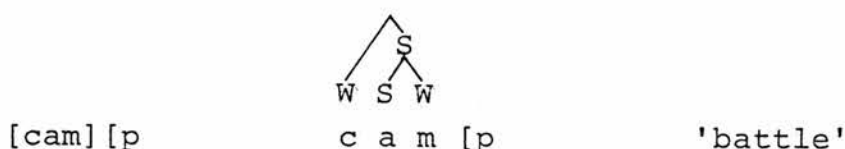
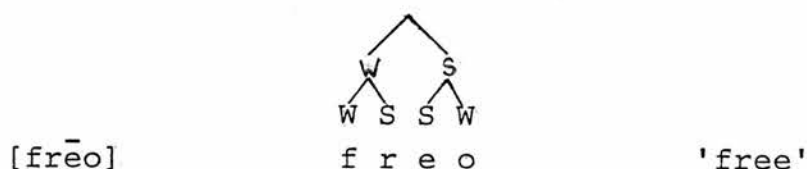
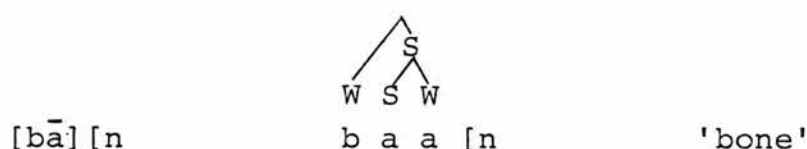
The syllable template is expanded maximally to the left in accordance with the sonority hierarchy. There is no syllable boundary overlap.

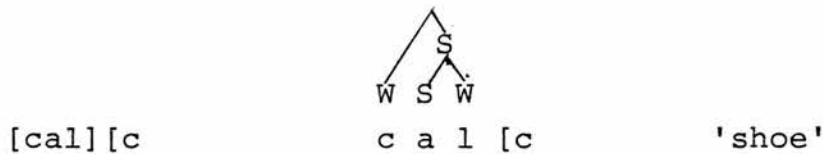
I follow Giegerich (1985) in incorporating Hayes' (1982) observation that no word-final consonant contributes to the determination of syllable weight, into our syllabification procedure. This would mean that all word-final

consonants are syllabified by the principle in (1.11) as onsets of the following syllable. Giegerich claims that since all syllables have compulsory onsets, it is these 'extrametrical' consonants (note the different use of this term here from the way it was employed above in Kiparsky's (1981) description of consonantal 'affixes') that may fill the empty onset of a following syllable. If this syllable already has an onset and the resulting cluster would be ill-formed, this segment gets attached to the preceding syllable coda as a W sister⁵. Such an account would explain why it is only word-final consonants and not word-final vowels that are 'extrametrical' in this sense - onsets can only contain consonants.

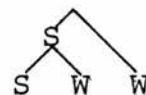
The effect of the application of the above syllabification principles, would be underlying syllabifications like those in (1.12):

(1.12)





In analyses such as the ones to be put forward in this thesis, the data we are dealing with are necessarily words in isolation. I suggest that in any form that surfaces from the lexicon (which I argue in Section 2.2 is the place where syllabification, stress assignment and morphological processes take place) with an 'extra-metrical' segment, this will get attached to the syllable preceding it by a late rule. The labelling of such nodes is predicted by the sonority hierarchy. In a VV[C# sequence the consonant is lower in the hierarchy than a vowel and

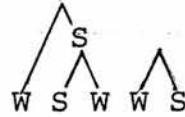


can therefore be assigned a W node: V V C. In a sequence VC[C# we find the same structure - the second consonant must necessarily be lower down the hierarchy and hence weaker in metrical terms than the first otherwise the initial syllabification would have produced V[CC where sonority in an onset increases from the margins, e.g.

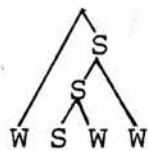


e f t 'again' where a stop is lower on the hierarchy than

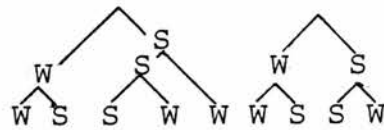
a fricative. If, however, the final consonant is more sonorous than the preceding one and thus violates the hierarchy it is predicted that this consonant will either



be a possible syllabic, e.g. maadma in which case the word is bisyllabic; or else that it is [+coronal] and hence an affix (or 'extrametrical' in Kiparsky's



sense) e.g., syh, 3 sg. pres. seon. Medially, the same principles apply. For example, take [bræm][blas]. The sonority hierarchy predicts that /m/ is less sonorous than the preceding segment, otherwise it could not be in the same syllable without violation of its principles (since extrametrical coronal consonants are only possible word-finally). It can therefore correctly be



adjoined as a sister W node: bræmblas.

Thus, if we base our syllabification on the maximal onset principle and the sonority hierarchy, we find that our syllable template need only be specified minimally i.e., to reflect the structure of a heavy syllable as in (1.10) and that all remaining structure and node labelling is predictable from the sonority constraints and the condition that word-finally coronal consonants may violate

the hierarchy.

1.2.1 Metrical foot structure

Having established these principles of syllabification, we can now go on to look at structure above the syllable and the ways in which syllables are organised into larger prosodic units. In Chapters 2 and 3, I examine in detail the rules for stress assignment in Old and Middle English, but in this Section I would like to outline the model I intend to use and the way it refers to suprasegmental phonological constituents such as the syllable, and groups these into foot and word structures. Central to the model, first proposed by Rischel (1972), Liberman (1975) and Liberman and Prince (1977), is the notion of relative prominence. That is, phonological phenomena such as stress are better viewed not as the inherent property of a particular segment, but rather in terms of relative prominence which is defined on constituent structure. The perceived 'stressedness' of a syllable reflects the fact that this syllable is relatively more prominent than the one adjacent to it. Unlike what earlier generative models such as SPE proposed, there is no need for an n-ary stress feature - the prominence of one node is defined solely in relation to its sister. I do not intend to present any justification for preferring this metrical model over the SPE one as this has been well argued by LP, Hayes (1982) and others. I will simply give a brief outline of the model I intend to use and point out some of the ways in which it differs from certain earlier accounts e.g., LP and Selkirk (1980).

Relative prominence amongst syllables is expressed by a binary branching tree in which sister nodes are labelled S (stronger) and W (weaker):

(1.12)

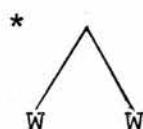


Since S and W are purely relational labels, any occurrence of S or W on its own would be uninterpretable, as would a binary tree with both nodes labelled the same (consider 1.14 a and b). Furthermore, since each node in the tree is restricted to binary branching, configurations such as those in (1.14 c) are also ill-formed.

(1.14) a.



b.



c.



The labelling of the branches as S W or W S is language-specific and is generally determined by the rules of stress assignment. Within the LP framework, for example, in English each vowel is assigned a feature [\pm stress] and a well-formedness condition ensures that S only dominates [$+$ stress] segments. This feature is needed in LP to differentiate between the stress patterns of words like

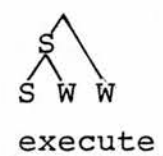


gymnast and raccoon, but Selkirk (1980) and Giegerich (1985) show that the stress feature is not necessary for an analysis of English stress (although the solutions they present are different), and as I will not be employing the feature in this thesis, I do not propose to go into any details of its use in the LP model. In spite of this, however, the general principle that S always indicates some degree of stress on the element (in our case, the syllable) it dominates, will be maintained. The principles governing the assignment of S will be outlined below and discussed in detail in Chapter 2.

In the LP model, a terminal S node followed by one or more Ws are grouped together into metrical feet of

of the type $\begin{array}{c} \diagup \diagdown \\ S \quad W \end{array}$, $\begin{array}{c} \diagup \diagdown \\ S \quad \begin{array}{c} \diagup \diagdown \\ S \quad W \end{array} \end{array}$, etc. These feet are also gathered into binary branching structures which reflect the prominence relations (i.e., the stress contours) within the word as a whole. The word rule in Modern English is formulated to predict the location of the primary stress of a word such that the right-hand one of a pair of nodes is S only if it branches. Compare

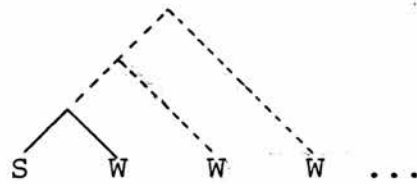
(1.15)



The Designated Terminal Element (DTE) of a tree, which pinpoints the location of main stress, is that syllable which is dominated by S nodes all the way up.

The OE data, however, do not require rules which specify

labelling as either $\begin{array}{c} \diagup \diagdown \\ S \quad W \end{array}$ or $\begin{array}{c} \diagup \diagdown \\ W \quad S \end{array}$ - only $\begin{array}{c} \diagup \diagdown \\ S \quad W \end{array}$ structures are found. This is due in part to the observation that, with the exception of certain prefixed forms, primary stress in OE always falls on the first syllable of a word and is not sensitive to any other phonological information. The assignment of the S node is determined by the OE Stress Rule and any unstressed syllables to the right of this node are gathered into a metrical foot in accordance with a foot template. This template (1.16) stipulates that each well-formed foot in OE is left-strong, unbounded to the right and also that it is minimally binary:

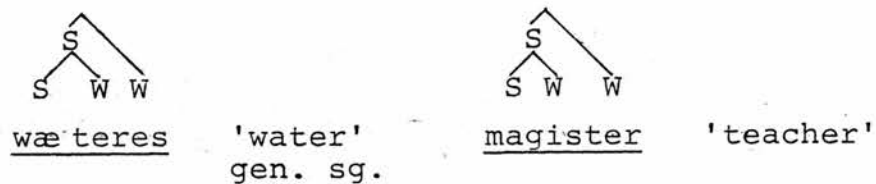
(1.16) Metrical Foot Template

This template will be mapped onto words to produce structures like those in (1.17):

(1.17) a.



b.



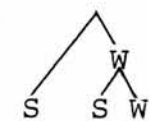
In the case of trisyllabic words with initial stress the metrical notation (as defined by our Metrical Foot Template) allows representations like those in (1.17 b) where relationality between three syllables is expressed in terms of two binary branching trees. There is no prominence relation defined between the two W nodes - each of them is simply weaker than the syllable labelled S⁶.

1.2.2

I will argue in Chapter 2 that stress is purely morphologically conditioned in OE and that because of the importance of this morphological conditioning, the stress rules

should operate in the lexicon alongside the rules of word-formation. In so doing, I adopt the 'lexicalist' hypothesis which regards certain phonological rules as an integral part of a level-ordered morphological component situated in the lexicon (Siegel 1974, Selkirk 1980, Kiparsky 1982). I will examine in some detail the application of such a theory to the processes of affixation and the way in which they affect stress placement in OE. In particular, if the OE Stress Rule assigns primary stress to the initial syllable of a word, how does this affect the labelling of nodes if a prefix is present and how will secondary stress be predicted? To anticipate a little, we find that while prefixed nouns surface with structures like that in (1.18 a), prefixed verbs will have non-initial stress and consequently a prefix without metrical structure (1.18 b):

(1.18) a.

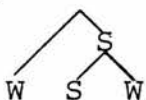
ætweला 'supply of food'

b.

gewringan 'to wring'

The lack of metrical structure on ge- follows from the foot template: since ge- is unstressed, it will not be assigned S by the Stress Rule and the foot template does not permit it to attach to the foot that follows as

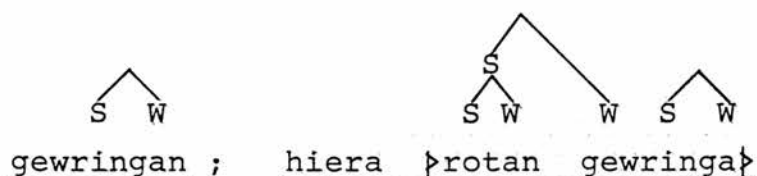
*



gewringan. The template stipulates that W nodes are the right-hand sisters in any foot structure, so as a

direct result an unstressed initial syllable such as ge- will become a W sister of a preceding foot when the word occurs in connected speech:

(1.19)



The metrical structure erected as a result of the application of the Stress Rule and the constraints imposed by the Metrical Foot Template are, therefore, strings of metrical feet. If, due to processes of word-formation, a lexical item is made up of two or more such feet, the roots of these will be joined in accordance with the Word Rule. The Word Rule in OE assigns relative prominence in the same way as the foot template, i.e., a left-strong, binary-branching, relationally defined tree:

(1.20)



All morphologically simple words in OE constitute single feet, and in Chapter 2 I will argue that roots and affixes are assigned stress and their metrical structure built simultaneously in the lexicon and that they get adjusted during the derivational process in accordance with the Word Rule (which will also be spelt out in that Chapter).

Evidence for the introduction of the foot as a phonological constituent is ample. The domain for the resyllabification of intervocalic consonants as ambisyllabic is the foot (Selkirk 1980, 1982), as is the flapping of intervocalic /t/ and /d/ in certain accents of ModE. Aspiration of voiceless stops is found only in foot non-final positions (Anderson and Ewan, forthcoming) and it has been suggested that pre-vocalic glottal stops in German are found only foot-initially (Krech 1968; Giegerich 1985 and MS.b). Most importantly, the foot represents the unit of stress timing in languages like English (Abercrombie 1967, Pike 1946). Stressed syllables in connected speech occur at roughly isochronous intervals, and the foot stretches from the onset of one stressed syllable to the onset of the next, taking in all the unstressed syllables in between. It has been pointed out (Classe 1939) that experimental evidence does not show exact acoustic isochrony in English, but that there is nonetheless a strong enough tendency towards it for it to be taken as a linguistically valid concept in phonological theory. We may therefore recognise this tendency for 'phonological isochrony' (Classe 1939, Lehiste 1977, Halliday 1967) as a perceptual reality and incorporate it into our theory.

My adoption of the foot as a unit of rhythmic timing in the analysis of OE would seem to imply that OE, like ModE, is a stress-timed language. Although we can have no direct evidence for such a claim, I think we may plausibly reconstruct the existence of such a state of affairs. One of the characteristics of stress-timed languages is a large amount of reduction of the vowels of unstressed syllables. We find this to a great extent in ME, but the start of such reductions may be traced back to OE (Campbell 1959: paragraph 396). Stress-timing has been assumed for ME not only on the basis of vowel reduction, but also due to the fact that its

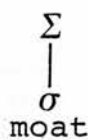
alliterative metre is defined purely in terms of regular accentual units: rises are filled by stressed syllables which need not be also heavy as in OE (c.f. Chapter 2) and falls may be constituted by an unlimited number of unstressed syllables. Notice, however, that the OE alliterative metres must also be taken as having an accentual rhythm since the alternation between stressed and unstressed syllables is strictly observed. This fact, together with the onset of vowel reduction in unstressed syllables, may be taken as signs of the beginning of a typological shift of the type described by Luick (1898) from 'logical' to 'rhythmic' timing in connected speech. If stress-timing is established by ME, we must assume that such an essentially gradual change must have started in OE at least. This would seem to be supported by the observations made above and also by the first instances of the quantitative changes of vowel lengthening and shortening which I shall argue are crucially linked with the rhythmic units of stress-timing. Roach (1982) and Mitchell (1969) suggest that a language may display different degrees of stress-timedness, or in other words that elements of both syllable- and stress-timing may be present in the same language with one predominating to a greater or lesser extent. The remains of syllable- or moric⁷-timing may be indicated by the reliance of the metre on a quantitative as well as an accentual measure in the determination of its rises. I think we may be justified in saying that by the time of Beowulf (i.e., the late tenth century) stress-timing was well on the way to becoming the rhythmic principle of the language.

To return to our discussion of the status of the foot as a phonological constituent, the assumption of isochrony as a characteristic of stress-timed languages is supported in the case of monosyllabic words by the observation that they tend to get 'stretched' phonetic-

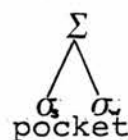
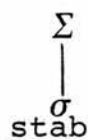
ally in order to attain a 'normal' or 'ideal' foot duration (Classe 1939, Nakatani and Shaffer 1978, Sonnenschein 1925, Ladefoged 1982). Selkirk (1980) attempts to capture this phenomenon of isochrony within her notation by proposing that a monosyllable be represented as constituting a prosodic foot (Σ) by itself at the point where stress foot structure is associated with a word in the lexicon. Compare:

(1.21)

a.



b.

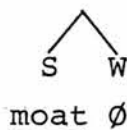


Notice that by doing this, Selkirk has moved away from relationally defined prominence by assigning a non-branching tree to lexical monosyllables. Giegerich (1980, 1984, 1985), however, points out that there is no need to abandon a binary, relational approach to prominence in order to capture the above observation about the duration of monosyllables. He proposes a Strength Provision, which in effect fulfils the same function as our Foot Template⁸, and which states that

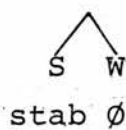
every word must have at least one $\begin{array}{c} \wedge \\ S \quad W \end{array}$ structure. In the case of monosyllabic forms, he does this by allowing the right hand W node to dominate a zero syllable (represented in the notation by \emptyset). This would produce the following analysis for the examples in (1.21):

(1.22)

a.



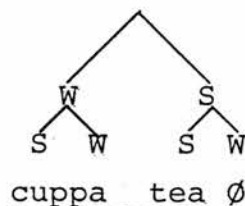
b.



The introduction of this empty syllable not only permits all trees to remain binary branching, relational constituents, but also finds motivation as an indication of the extra duration characteristic of such items (Nakatani and Shaffer, 1978).

Giegerich observes that this notation can also account for the phenomenon of enclisis found in ModE. These are cases like drinka pinta milka day, cuppa tea, ladies 'n' gentlemen where an unstressed syllable in a phrasal group 'attaches to' the preceding stress foot. Where this foot contains a monosyllabic lexical item, Giegerich argues that the enclitic simply fills the zero syllable to its right to produce a surface structure like

(1.23)

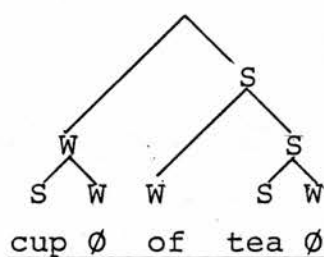


Notice, however, that this type of structure is predicted within the model presented here as a consequence of the requirement that all feet are left-strong. In order to avoid structures such as that in (1.24) which is ill-formed with regard to performance phenomena (in the sense that a phrase-internal pause is followed by

an unstressed syllable), Giegerich has to posit a constraint on the occurrence of zero syllables. This Zero Syllable Constraint (Giegerich 1985: 14) stipulates that of two adjacent terminal W nodes, neither occupies a zero syllable. Metrical representations like (1.24) which do not reflect utterance characteristics are thus ruled out.

(1.24)

*



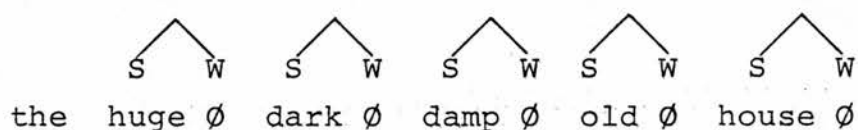
(As structure above the foot level is not relevant to the present discussion, I do not intend to outline the assignment procedure involved. Note also that the representation in (1.24) reflects the notation described in this thesis rather than the one employed by Giegerich).

By adopting an analysis whereby feet are not constructed by a set of rules, but are mapped onto utterances from a foot template which is left-strong and has no right-hand boundary, we need neither the Strength Provision nor the Zero Syllable Constraint⁹. Cliticisation takes place automatically, as any unstressed material to the right of an S node is 'drawn into' that foot in accordance with the template. Notice that my analysis of gewringan in (1.19) has already presupposed such an operation as a direct consequence of the application of the Foot Template in (1.16). This does not, however, lessen the motivation for the introduction of the zero syllable, for it is only on the basis of the durational

characteristics of monosyllables mentioned above that we can propose a minimally binary foot template. The representation of this extra duration in terms of a zero syllable (rather than by implying the equivalence

of Σ and Σ in Selkirk's notation) is also supported by the pauses which can be observed in slow speech consisting of a string of monosyllabic lexical items, e.g.,

(1.25)

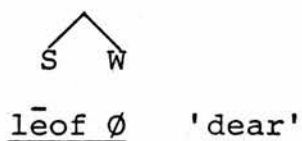


(For the way in which such monosyllabic feet may be rhythmically reorganised in normal connected speech by means of a metrical transformation, see Giegerich 1985, Chapter 4).

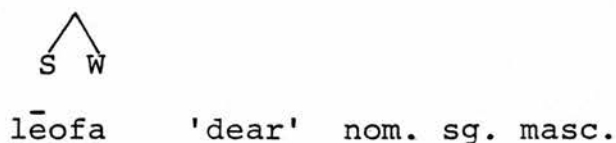
Although there is no direct evidence of enclisis in OE, I would feel justified in allowing for the possibility of such a process since OE is stress-timed and subject to similar types of prosodic constraints as found in ModE. I propose, therefore, to adopt an analysis which characterises the prominence of monosyllabic lexical items in terms of a relational tree where the weak right-hand sister dominates a zero syllable. The Metrical Foot Template proposed in (1.16) may thus be maintained. In an inflected language such as OE, this zero syllable will be filled in a large number of instances, by an inflectional morpheme. I will argue that this takes place in the lexicon together with all the other morphological processes. For example, the nom. sg. masc. form

lēofa 'dear' would have an underlying form with a zero syllable (1.26 a); it would leave the lexical component of the grammar as in (1.26 b) - (see Section 2.2 ff. for details). A zero syllable may equally be filled postlexically as in the case of an unstressed prefix immediately following a monosyllabic foot (1.26 c), and c.f. also the example in (1.19).

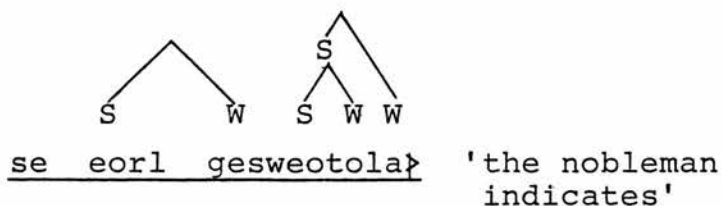
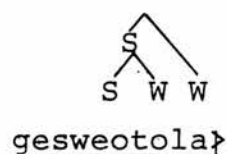
(1.26) a.



b.



c.

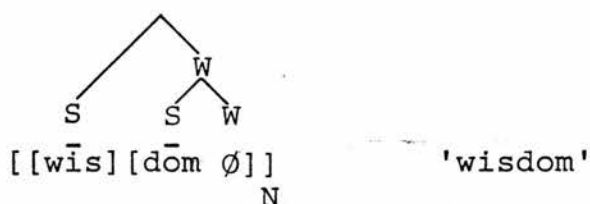


1.2.3

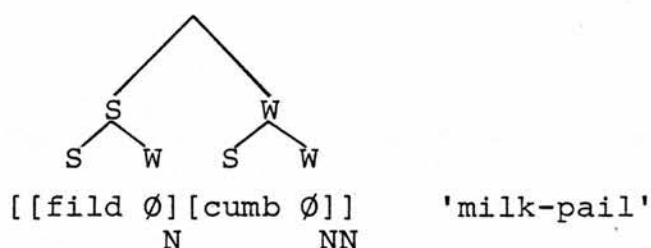
In concluding this outline of the assignment of metrical structure, I would like to examine briefly the role of the node M (mot). It was proposed by LP that such a node should automatically be placed on top of every word tree in order to separate prosodic levels so that the rule assigning metrical structure in compounds could not 'see' the structure of the tree already built below this M node. Giegerich (1983, 1985) argues that M is not an absolute phonological prime in the sense that Selkirk's prosodic categories are; i.e., it makes no reference to any structural properties of the string, but is simply part of the lexical representation of the word. He claims that "M ... is a phonological prime in a narrow sense ... the criteria we appeal to in assigning M nodes to metrical structures are semantic in nature"¹⁰ (1983: 14). I argue in Chapter 2 that because of the nature of the rules I propose for the assignment of metrical structure in OE - specifically the fact that they are level-ordered - I have no need for this node.

The cases where M is most relevant are in differentiating between primary compounds on the one hand and lexicalised compounds and non-compounds on the other. It will be argued that this function is fulfilled in the model I propose in two ways. Firstly, all lexemes will be represented in the lexicon together with syntactic bracketings which are appropriately labelled. Only those items with internal, labelled brackets are interpretable as primary compounds. Lexicalised compounds are treated like derivatives via affix and subject to the Word Rule, while the 'supra-foot' structure of primary compounds is assigned by the Compound Rule. Compare (1.27 a and b):

(1.27) a. lexicalised compound



b. primary compound



Secondly, the Word Rule and the Compound Rule are assigned at different levels in the lexicon, the former operating first to remove all morpheme-internal zero syllables. Compounding takes place and the Compound Rule applies at a later level without altering any previously erected metrical structure. The full implications of this level ordering approach will be discussed in detail in Section 2.2.5.

1.3 Vowel length adjustments

The examination of a number of quantitative diachronic processes will be the sole concern of Chapter 4 and an attempt will be made to analyse them in terms of their suprasegmental structure. The processes I refer to are those which form the so-called 'English vowel length conspiracy' (Lass 1974). These events spanned the history of the English language from approximately

the sixth to the thirteenth centuries and involved a series of seemingly unconnected sound changes which affected the quantity of stressed vowels in specific environments. The first of these had the effect of lengthening all word-final stressed vowels, as for example, sæ > sā 'sea', twā-feald > twā-feald 'two-fold', þu > þū 'thou'. As a result, OE has no lexical category words with a final short vowel.

In Chapter 4, I will look in detail at the dating, description and formalisation of what have traditionally been viewed as three separate quantitative processes. At this point, I will simply outline them in the familiar way and make no attempt at an evaluation of the accounts. Vowel lengthening before homorganic clusters is placed in the ninth century and affected vowels before clusters of a nasal or liquid plus a homorganic voiced stop. The change was generally confined to monosyllabic words, but is found to a limited extent in bi-syllables as well, e.g., blind > blīnd 'blind', camb > cāmb 'comb', windan > wīndan 'wind'. Lengthening was inhibited by a third consonant in the cluster: hundred 'hundred', timbre 'timber'.

Vowel shortening before clusters and in tri-syllables is generally assumed to have taken place in two stages, the first in the seventh and eighth centuries and the second in the tenth. As the name suggests, the consonant clusters which created the domain for this process had the opposite effect from the homorganic clusters which induced lengthening of the stressed vowel. Examples of shortening before clusters are gōdspell > godspell 'gospel', fīfti3 > fifti 'fifty', fēdde > fedde 'fed'; and in trisyllabic forms: hēringas > heringas 'herrings', crīstendom > cristendom 'Christendom', tādapoll > taddepol 'tadpole'.

The final change I will be looking at is a ME process which lengthened vowels in the open stressed syllable of a bi-syllabic word. The traditional dating is between 1200 and 1400, with much geographic variation. There has been a lot of debate as to the cause of this change, the precise characterisation of the environments and as to whether a qualitative change was also involved. The various proposals which have been put forward will be reviewed in Section 4.3 before my own interpretation of the data is presented. Words which were affected by the change to be discussed include forms like spēke 'speak', trēde 'tread', āpe 'ape', hāsel 'hazel'.

Most of the previous work in this area has centred on the formalisation of these processes in isolation with very little effort being made to link the two apparently opposing forces of lengthening and shortening which seem to be at play. There have been two main attempts at a unitary explanation for these quantitative changes. Lass (1974) proposes a teleological/functional account in which the changes form part of a vowel length 'conspiracy' which aims at the diachronically remote goal of the neutralisation of vowel length in English. He claims that Aitken's Law, which is operative in Scots dialects (and which makes length predictable in monosyllables closed by a single consonant - the only environment not touched by the earlier part of the conspiracy) is the last stage in the neutralisation of the long/short vowel contrast. This teleological approach has provoked much metatheoretically orientated debate which will be examined during the evaluation of Lass' own analysis in Section 4.1.

Explanations which have been causal in nature have tried to establish the phenomena which triggered the series of changes. These have generally either made reference

to a shift in pre-Old English to a Germanic-type stress system (Lehmann 1956), or have regarded the changes in the light of Luick's proposal (1898) that there was a movement from 'logical' to 'rhythmic' timing in connected speech which eventually had a bearing on the recurrent behaviour of individual words. The former approach claims that in Proto-Germanic the more uniform distribution of stress over the word worked isolatingly on the syllables and contributed to the preservation of quantity. "The reduction of strong secondary stresses and the resultant development of accentual word patterns made up of a strong primary stress and one or more relatively weak ones led to a shift in the articulatory units. In Proto-Germanic the articulatory and accentual unit had been the syllable; in OE it came to be a word or phrase." (Lehmann 1956: 95). Firstly, the notion of stress being spread over the entire word is phonetically dubious. The characteristic of stress languages is the culminative function of stress (Trubetzkoy 1969; Jakobson 1931; Martinet 1954, 1960), that is, that only one syllable per word will receive primary stress. There are no clear cases of languages with stress spanning the whole word (c.f. Hyman 1977). Secondly, as pointed out by Abercrombie (1976), the word is not the unit of rhythm in stress-timed languages and can only be called an "accentual unit" in lexical terms.

Luick's theory, on the other hand, is essentially based on the word in connected speech and what he seems to be suggesting is the implementation of a principle of rhythmic organisation (i.e., the foot) which characterised the change from pitch-accent to stress-accent. I will return to Luick's proposal in Section 4.5 because I believe he was on the right track. The problems which his theory encountered and which caused it to be disregarded, were those of lack of any conclusive evidence

and phonetic confirmation. Through adopting a prosodic approach to the changes, and suggesting a phonetic basis which can account for their implementation, I hope to be able to overcome these difficulties.

Segmentally, the processes in question have been shown to be unconnected (except to the extent that they all affect stressed vowels) unless one adopts a teleological standpoint as mentioned above. In suprasegmental terms, however, a very clear pattern can be seen to emerge which allows for a definition of the relationship between these quantitative changes without any reference to a conspiracy or an ultimate goal. In Chapters 2 and 3 I will propose an analysis of the syllable structure and stress contours of OE and ME. Once these have been established, we will be in a position to look at the suprasegmental (specifically syllable and foot) structures which are affected by vowel lengthening and shortening to determine what they have in common prosodically. In Chapter 4, I will go on to show the importance of the role played by the foot, which is the unit of rhythmic organisation in stress-timed language (c.f. Luick 1898). The notion of the foot goes hand-in-hand with that of isochrony, i.e., the tendency for all feet to be of roughly the same duration, as discussed above (Abercrombie 1964, etc.). We will see that it is essentially a consideration of these factors and the ways in which their implementation is phonetically realised that produces the effects of the so-called 'vowel length conspiracy'.

I would like to emphasise that the analysis presented in this thesis differs from the possible non-teleological interpretation of the account proposed by Luick (1898) in that it is based on phonetic evidence. In general

terms, it is supported by the findings of Lehiste (1970) who concludes that the duration of sounds may be conditioned by any of the following factors:

- a) point and manner of the articulation of the segment;
- b) the preceding and following segmental sounds;
- c) suprasegmental factors (especially stress);
- d) the position of the sound within a higher level phonological unit (for example, the foot or phrase).

More specifically, I shall make reference to experimental evidence which is directly related to the phenomena I am concerned with and use it to support claims which at this stage may seem rather vague and unsubstantiated.

1.4 'Cause' in historical linguistics

I would like to mention briefly a similar study done by Árnason (1980) on quantity in Icelandic. It is claimed that while in Modern Icelandic all stressed syllables are heavy, in Old Icelandic (OIc) the weight of a syllable was determined by its segmental composition (a short vowel plus a short/single consonant being a light syllable and all others being heavy). This allowed for the existence of super-heavy or hypercharacterised syllables, e.g., fátt 'few' (VVCC). Based on a final maximalist syllabification - except in the cases of /p, t, k, s/ plus /v, j, r/ where the syllable boundary always falls between the two consonants - Árnason accounts for the shortening and lengthening processes which take place in the history of the language in terms of two rules:

(1.28)

$$V \rightarrow \bar{V} \quad / - C' \$$$

and/or

$$V \rightarrow \check{V} \quad / - C_2 \$$$

(Árnason 1980: 35)

Without going into an evaluation of his analysis, let me just say that Árnason ascribes these changes to a phonetic tendency for all stressed syllables to be of the same quantity. He notes that while there is this single underlying tendency, the cause of, or context for, the changes is different: lengthening is due to the lengthening influence of primary stress, while shortening is determined by the presence of consonant clusters and the tendency for vowels to be shorter in such contexts.

Clearly there is a similarity between the situations in English and Icelandic. Crucially vowel quantity within the stressed syllable is adjusted. Árnason, in fact, looks briefly at the quantity changes in English, but adopts an interpretation along the lines of Lass (1974). There remains one important difference: after the changes in Icelandic, vowel length is totally predictable and the quantity of a syllable is uniquely determined by stress. In English (excluding Scots dialects), on the other hand, there remains one context where vowel length is phonemic: VC#, and furthermore we find both light and heavy stressed syllables (ME láferce, swéete). We must therefore look for a different way of accounting for the quantitative processes in English, particularly if we reject Lass' analysis, as I propose we should (c.f. Sections 1.3 and 4.4).

There are, however, some theoretical points raised by Árnason which are equally relevant here. Primarily, there is the interpretation of the notion 'cause of a change'. He argues that there is a close relationship between the notions 'cause of a change' and 'condition for a change' and that the term 'cause' in historical linguistics can only be fruitfully used in the sense of a 'necessary condition'. This may be expressed by the statement 'Under condition X, change Y can take place' where there is some assumed connection between X and Y and that X is a necessary (but not sufficient) reason for Y to take place. In other words, under this condition Y may take place but it is not necessarily so that it will. In proposing this definition of 'cause', Árnason is not claiming that there do not exist sufficient conditions for linguistic changes, but merely that it would be impossible (or at least highly unlikely) for a linguist to find them all, especially in historical linguistics. Furthermore, the fact that a change does not take place every time the condition is present (i.e., exceptions to changes both within and across languages) would seem to indicate that it is not a sufficient condition (i.e., one that would make the change absolutely necessary).

To a certain extent I would agree with Árnason's claim that 'cause' in historical linguistics may only be defined as a 'necessary condition'. Where there is clearly a relationship between a change and its context, it may be that this relationship is a causal one. However, if we can only define the presence of a certain factor in the environment of a change as a necessary (but not sufficient) condition, we have no definite grounds for claiming a causal connection between this phenomenon and the occurrence of the change. It is debatable therefore, whether 'cause' or 'causal'

are appropriate terms in such a context and that is is not in fact the case that all we can state for certain, is the existence of a relationship between X and Y without being able to make any claims as to the nature of this relationship. I will argue in Chapter 4 that there is a relationship between the principle of isochrony (as reflected by the phonetic tendency for inverse proportionality between foot and stressed syllable quantity) and the lengthening and shortening processes in English. Although this may be called a 'causal relation' under Árnason's definition in as much as the existence of the tendency was a necessary condition for the changes to take place, I do not believe the terminology to be appropriate. I do not think it is possible on the basis of the available evidence, to show conclusively that this phonetic tendency was a causal factor in the environment of the changes, and not simply a factor that was present in the language (and necessary for the changes), but played no direct causal role in this particular relationship. I hope to show that syllable and foot structure are crucial factors in the unified formulation of the changes and will suggest that there is a relationship between certain prosodic characteristics of the language and the quantitative processes in question, but make no claim as to the nature of this relationship. Such an account, by virtue of being grounded in phonetic evidence and making no reference to ultimate goals, is preferable for the reasons to be outlined in Section 4.4, to the teleological one offered by Lass.

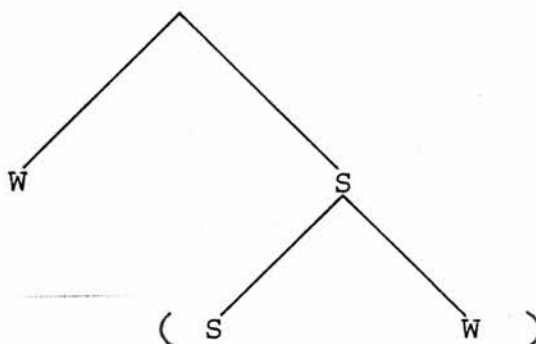
Chapter 2

Old English

2.1 OE syllable structure

In the preceding Chapter, I argued for a rigorous initial maximalist mode of syllabification, and a syllable template of the form:

(2.1) = (1.10)



As a consequence of this approach, we can quite neatly characterise the light/heavy syllable distinction by stipulating that the highest S node (i.e., the rhyme) of a heavy syllable branches, while that of a light syllable does not. It follows from such an analysis that VV and VC constitute heavy syllables, whereas an open syllable containing a short vowel is considered light. This Section aims to examine whether this claim can be upheld in an analysis of OE, or whether we are forced to conclude that a VC syllable is light and a heavy syllable has to be VVC or VCC. Linguists such as Chomsky and Halle (1968) and Anderson and Jones (1977) have shown that VC clusters in ModE do not attract stress and are therefore described as 'weak'. While Chomsky and Halle do not speak in terms of syllables, Anderson and Jones arrive at their conclusion through different principles of syllabification from those employed in this thesis. Both, however, formulate their definition with respect

to stress assignment in ModE. A definition of syllable weight within the Metrical Phonology framework may be different, however, as it is concerned with the weight of syllables to which linguistic stress has already been assigned. One must be especially careful not to equate the two in OE, where stress assignment is not sensitive to syllable weight, but to morphological considerations. Our characterisation of what constitutes a light or heavy syllable must therefore be based on criteria independent of stress placement rules.

The most recent proposal for OE has been made by Lass (1983, 1984) in the context of the much debated equivalence of two light syllables and one heavy one in the poetic metre of OE. His argument centres around two main assumptions: firstly that VC counts as a light syllable in OE, and secondly, that an ambisyllabic syllabification must be assumed if the facts are to be accounted for. I will suggest that the first of these assumptions is unjustified, and the second unnecessary, and that in fact my original proposal can handle the data. (Recall that in Chapter 1, I advocated the adoption of a maximal onset mode of syllabification which is sensitive to the sonority hierarchy and language specific clustering constraints and which does not allow for ambisyllabicity).

2.1.1 The light/heavy distinction

It is generally accepted that the metrical rise in OE verse may only be occupied by a stressed heavy syllable or (through resolution) a light one taken together with a following unstressed syllable (Sievers 1885, 1893). By claiming that VC rhymes do not usually count as heavy, Lass (1983) has to propose a boundary shift to account for the occurrence of words like hron, þrym, God in

rise positions. When such monosyllables are followed by a word beginning with a consonant (c.f. the examples in (2.2)), this initial consonant is interpreted by the prosodic boundary shift rule as part of the preceding word.

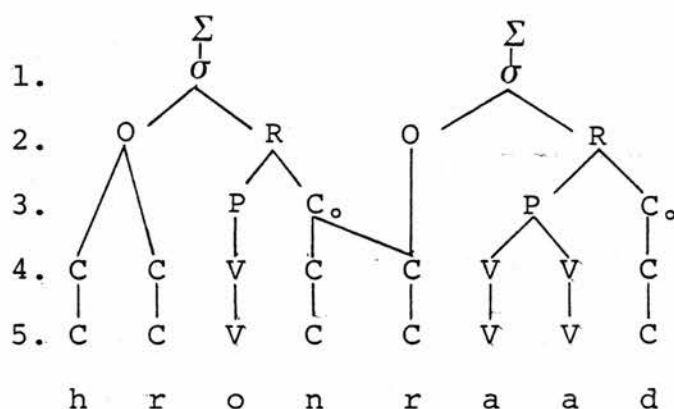
(2.2)

- a. þeod-cýninga þrým gefrunon Beo. 2
 b. ofer hron-rāde hyran scoldē Beo. 10
 c. geong in geardum þone God sendē Beo. 13

In the example in (2.2.b.) the /r/ of rāde would become

part of the coda of hron: $\begin{array}{c} \text{VC} \text{ C} \\ | \quad | \quad | \\ \text{hron-rāde} \end{array}$, thereby producing a heavy (VCC) rhyme for the stressed syllable. Such a shift is in no way 'natural', especially as the final clusters so produced do not seem to be bound by the usual phonotactic constraints of the language: */mj/, */nr/ and */ds/ are not permissible final clusters in OE, (unless, of course, the continuant is syllabic, which is clearly not the case in these examples). Furthermore, note that there is no evidence for boundary shift in ModE: the second consonant in a sequence VC#C will be realised as a syllable-initial rather than a syllable-final allophone. In order to avoid such problems, Lass proposes an extra tier of syllabic structure: "'moric' or 'quantitative', such that a prosodic C can be part of a higher-level, non-phonetic cluster" (1984: 4). He would therefore represent the structure of hron-rād as:

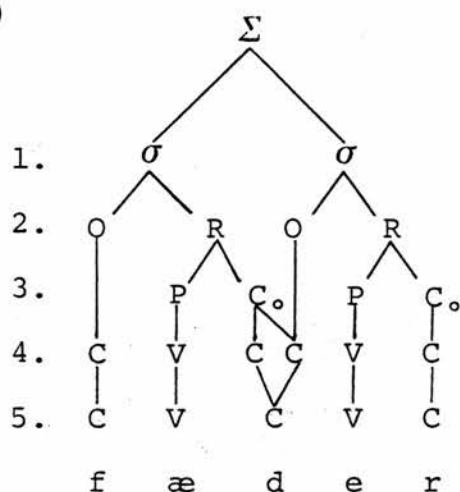
(2.3)



(Where O, R, P, C₀ stand for onset, rhyme, peak and coda respectively in Lass' template; σ = syllable and Σ = foot). Tier 5 represents the phonetic level, but the prosodic rules interpret only tier 4 where they find a rhyme which is -VCC and therefore heavy. Lass' solution remains entirely diacritic, however, or at the very least implies very strong analytical differences between metre and speech.

The positing of this extra prosodic tier also enables Lass to account for another instance of a light syllable in a metrical rise - the cases of resolution in bisyllabic forms like fæder, wrecend, dracan, etc. By analysing the intervocalic consonant as ambisyllabic, Lass allows this interlude to 'belong to' both syllables and "at tier 4, actually to be in each one" (1984: 4). His representation of the structure of fæder is given in (2.4).

(2.4)



By means of this notational trick, Lass allows an ambisyllabic consonant to be interpreted as a 'pseudo-geminate' at tier 4, thereby making the stressed syllable VCC and heavy. He claims, therefore, that by means of such a representation one can capture the prosodic equivalence of $\check{\sigma} \check{\sigma} \equiv \bar{\sigma}$ (or in more traditional terms VCV structures being equal to VCC) in that both constitute heavy feet. It is not clear exactly how, in the absence of other motivations for such structures, an abstract representation like this is a more adequate reflection of the relationship: more will be said on the matter in Section 2.1.2.

2.1.1.1

Let us look first at the justification for Lass' claim that VC does not constitute a heavy syllable in OE. In an appendix to the 1984 paper, the author points out the circularity of arguments based on poetic metre, for VC being a light syllable and retracts his earlier (1983) claim that the only examples of VC words in rises are those which are followed by another word beginning with a consonant, i.e., cases where boundary shift is possible. There are numerous examples of

such 'light' monosyllables followed by words with empty onsets (i.e., by a vowel). Consider:

(2.5)

- | | | |
|----|---|-----------------------|
| a. | wán ^ˈ ^ˈ und ^ˈ er wólcn ^ˈ um | <u>Beo.</u> 650a |
| b. | ƿæ ^ˈ r ^ˈ hím ^ˈ hél ^ˈ onfeng ^ˈ | <u>Beo.</u> 852b |
| c. | ƿæ ^ˈ t ^ˈ wæs ^ˈ Gó ^ˈ d ælmihtig ^ˈ | <u>D. of Rood</u> 39b |

Lass proposes that these be treated as instances of resolution:

Now if we allow boundary-shift for cases like hron-rād etc., where the onset of a word across a boundary is attached to the preceding coda, we can cross word boundaries for resolution as well, presumably. Thus any instance of -VC#V- would be 'secondarily' heavy by resolution. Given the power of these adjustments, they function as 'blocking devices' against disconfirmation of the claim that -VC is light, since the independence of the -VC rhyme is hidden in all instances; the adjustment devices make the -VC part of 'something else' in all situations.

(Lass 1984: 14-15)

Clearly, however, there is a difference between this kind of resolution and the bi-syllabic forms like fæder. While in the latter, the second V is always unstressed, in the former instance, the syllable containing this V may itself occur in a rise and therefore carry a full stress as for example, (2.5.d.) above. Furthermore, such resolutions would give rise to lines which could not be scanned as one of Sievers' types:

(2.6)

- a. * $\overset{/}{\text{se}}\overset{\times}{\text{cg}} \text{ on } \overset{/}{\text{sear}}\overset{\times}{\text{wum}}$ Beo. 249a
- b. * $\overset{/}{\text{mon}}\overset{\times}{\text{on}} \overset{/}{\text{mode}}\overset{\times}{\text{}}$ Beo. 2281a
- c. * $\overset{/}{\text{eal}}\overset{\times}{\text{unhlit}}\overset{/}{\text{me}}\overset{\times}{\text{}}$ Beo. 1129a

Additional counter-evidence to Lass' proposal is provided by the many examples of VC# occupying a rise line-finally. Would Lass wish to claim that boundary shift and resolution take place not only across word boundaries, but also from one line to the next and across syntactic boundaries too?

(2.7)

- a. $\overset{/}{\text{garc}}\overset{\times}{\text{ene}} \text{ man}$
 $\overset{/}{\text{wide}}\overset{\times}{\text{war}}\overset{/}{\text{o}}\overset{\times}{\text{as}}$ Beo. 1958-9
- b. $\overset{\times}{\text{ðæ}}\overset{\times}{\text{r}} \text{ on } \overset{/}{\text{wic}}\overset{\times}{\text{ge}} \overset{/}{\text{sæt}}$
 $\overset{/}{\text{omb}}\overset{\times}{\text{eht}} \overset{/}{\text{unf}}\overset{\times}{\text{orht}}$ Beo. 286-7
- c. $\overset{\times}{\text{pæt}} \overset{\times}{\text{wæs}} \overset{/}{\text{mōd}}\overset{\times}{\text{ig}} \overset{/}{\text{sēc}}\overset{\times}{\text{g.}}$
 $\overset{\times}{\text{Ōnd}} \overset{/}{\text{pā}} \overset{/}{\text{sī}}\overset{\times}{\text{ð}} \text{ -frōm} \overset{\times}{\text{e}}$ Beo. 1812-13
- d. $\overset{\times}{\text{pæt}} \overset{\times}{\text{hī}} \overset{\times}{\text{gebæ}}\overset{/}{\text{rdon}} \overset{/}{\text{wēl.}}$
 $\overset{/}{\text{Swā}} \overset{\times}{\text{se}} \overset{/}{\text{inwidda}}\overset{\times}{\text{}}$ Jud. 27-28

In cases like those in (2.7), I think that his alternative proposal that each vowel-initial word is preceded by a glottal stop thereby making all -VC#V sequences into -VC#CV (and thus changing all examples of cross-boundary resolution into ones of boundary-shift) only serves to make the circularity more evident. In fact, not only is the argument circular, it is also misguided as Giegerich (MS.b.) points out. If all initial vowels have [ʔ] as their onsets, then it is these glottal

stops that alliterate with one another in the metre (rather than one vowel alliterating with another dissimilar one). Since alliterating segments are taken to represent phonemes, one would have to posit a /ʔ/ in each of these contexts. Giegerich argues that there is no conclusive evidence for the existence of such a phoneme in ModE or German because, amongst other things, it is non-contrastive since it is in free variation with zero: /ʔ V/ = /∅V/. That is not to say, however, that OE did not have a /ʔ/ phoneme (although no-one to my knowledge has so far made such a claim).

Let us assume for the sake of argument that OE did have a /ʔ/ phoneme. How exactly is this to be handled by Lass' boundary shift? If the boundary of a VC#ʔV sequence is shifted to VCʔ][V, should the /ʔ/ not then get lost since it is no longer syllable-initial? Furthermore, how would one account for the elision in forms like *bi-innan > binnan 'within', *bi-ūtan > būtan 'without', *ni-is > nis 'is not', if a syllable-initial /ʔ/ is posited for OE? This serves to further highlight the ad hoc nature of Lass' analysis which seems to be immune to any phonetic constraints. In the light of such arguments, and the existence of other theories¹ which account for both dissimilar vowel alliteration and the occurrence of -VC#V sequences in rises in OE alliterative metre, I feel that the 'glottal catch' alternative offered by Lass may be dismissed.

If we do not accept Lass' boundary shift proposal, then his case for VC constituting a light syllable is rather weak. I would now like to discuss two additional instances which further argue against Lass' claim that "OE metrics provide no independent evidence for the weight of -VC" and which in fact show that -VC must be treated as a heavy syllable in OE.

2.1.1.2

By proposing tier 4, Lass allows his proposal to be unbound by phonotactic constraints and allophonic considerations. This emphasises the strictly non-phonetic nature of his analysis. We have already discussed the sensitivity of syllabification rules to what Vennemann calls the 'Law of Initials and Finals' (1972). One can employ this basic criterion together with the rules of OE metrics, to come to a phonetically acceptable conclusion as to the composition of a heavy syllable. True, in a vast number of cases, the syllabification of medial clusters is ambiguous. Consider the examples in (2.8) where the syllable division may come after either the first or the second of the consonants in the underlined medial cluster.

(2.8)

- | | | |
|----|--|------------|
| a. | se ^ˈ ce ^x an on gēs ^ˈ ynt ^x um | Beo. 1869a |
| b. | ge ^ˈ ong ^x um gār-wig ^ˈ an | Beo. 2811a |
| c. | wō ^ˈ þe bēw ^x und ^ˈ en | Beo. 3146a |

There are some cases, however, where there is only one possible syllabification for the syllables in rise position (I use . to indicate syllable boundaries):

(2.9)

- | | | |
|----|--|------------|
| a. | feal ^ˈ .we ^x mearas | Beo. 865b |
| b. | swefe ^ˈ þ æ ^x fter sým ^ˈ .lē ^x | Beo. 1008a |
| c. | Næs δā ^ˈ on hlyt ^x .mē ^ˈ | Beo. 3126a |

The metre determines that the syllables in question must fill a rise, and since they are not in positions where



resolution would be possible (e.g., *fealwe méarás with only three positions in an unmetrical half-line), we can take this as one indication that VC is considered a heavy syllable.

A further argument for the status of VC as heavy is afforded by geminate consonant clusters. In OE, geminate consonant spellings are found in both word-medial and word-final positions, e.g., steppan 'to step', swellan 'to swell', loccian 'to attract, bind', mann 'man', penn 'pen, fold', holl 'hole'. Luick (1921) and Sievers (1901) describe geminates as "by nature"² only possible in bi- and polysyllabic words, i.e., medially, and it is only through the loss of post-tonic vowels in PGmc that originally intervocalic geminates came to stand in word-final position. In the spelling, these final geminate clusters are usually simplified although 'etymological' spellings are often found, especially if a morphologically related bisyllabic form with a medial geminate exists:

(2.10)	<u>eal</u>	<u>eall</u>	<u>ealles</u>
	<u>man</u>	<u>mann</u>	<u>mannes</u>
	<u>bed</u>	<u>bedd</u>	<u>beddes</u>
	<u>feor</u>	<u>feorr</u>	<u>feorran</u>

The phonological status of these geminates is hard to establish. Sievers (1899), Moulton (1954), Kurath (1956) and others hold the view that final geminate clusters became shortened (hence the simplified spelling), and that forms like cribb and mann alternate freely with crib and man since neither spelling created ambiguity. While geminate consonants were not phonemic in this position, they may still have retained their length allophonically. Campbell's (1959) view is that "double consonants generally remained in OE, though

the graph is often simplified" (paragraph 457). He bases this statement on the fact that "in the metre of late OE poems, eall for example, is still a long syllable, ll making quantity both finally and medially". In the light of the foregoing discussion, however, (i.e., that VC syllables also occur in metrical rises), and the arguments I present in this Section for the heaviness of VC syllables, this comment must be seen to be invalid.

Intervocalic geminate consonants, most of which arise through the operation of a WGmc gemination rule, are phonemically distinct from the corresponding non-geminate ones as is shown by the existence of minimal pairs like those in (2.11).

(2.11)	<u>stelan</u>	'to steal'	<u>stellan</u>	'to put'
	<u>hopian</u>	'to hope'	<u>hoppian</u>	'to hop'
	<u>wita</u>	'sage'	<u>witta</u>	'witness'

The segmental composition of stelan must be taken to be VCV, while that of stellan is VC_iC_iV. This structural difference is reflected in the metre: while VCV words occur in positions where they may be resolved, VC_iC_iV words, although found in this position too, also occur in rises where resolution would not be possible, thereby indicating that the first syllable must be heavy.

(2.12)	a.	hábbān scóldōn	<u>Beo.</u> 1798b
	b.	sæccē frēmman	<u>Beo.</u> 2499a
	c.	ālegdōn ðā tomiddēs	<u>Beo.</u> 3141a
	d.	bórd-hæbbendē	<u>Beo.</u> 2895a

It is true that VCV forms are sometimes unresolved in the metre, e.g.,

Nöldē ic sweord bérān	<u>Beo.</u> 2518b
-----------------------	-------------------

but they always occur at the end of a C-type, (and occasionally an A-type) line. Sievers (1885, 1893) accounts for this by allowing a light syllable to occupy a metrical rise when immediately preceded by a stressed heavy syllable - c.f. Bliss (1967), who claims that this is too fine a specification and proposes that a light syllable can fill a rise when preceded by a heavy syllable irrespective of the degree of stress it bears. The examples in (2.12 a and b) at least, do not fulfil either of these requirements, and nor are the occurrences of habban and sæcce line-final. As such, they cannot qualify as examples of unresolved light syllables in rise position and we must conclude that the geminate consonant spelling represents something phonemically distinct from a single consonant graph. Since such geminate consonant phonemes are found neither word-finally nor initially, the syllable division must fall between the two consonants when they occur in medial position. Contrary to Lass' claim therefore, OE metre can be seen to provide evidence which allows us to conclude that VC rhymes are heavy in OE. As a result, there is no need to postulate boundary shift or cross-boundary resolution rules as Lass does, in order to account for the data.

2.1.1.3

I turn now to Lass' other arguments for the lightness of -VC. He puts forward three:

- i) the syllable structure constraints in modern NGmc (except Danish). In these languages, the permissible rhymes for stressed syllables may be characterised as: -VV(C) or -VCC; -V, -VC, and hyper-characterised -VVCC are not possible. Notice, how-

ever, that these configurations apply to the modern language - Lass himself cites five well-formed syllable structures for the old Scandinavian languages: -VC, -VCC, -VVC, -VV, -VVCC. Through certain diachronic processes, the first and last of these types is eliminated (c.f. Árnason, 1980 for details). What Lass is claiming is that the syllable structures of old WGmc languages were like that of modern NGmc. It seems strange that he does not consider the obvious similarities of the two Gmc branches at the same period. Unlike Swedish, ModE continues to have stressed -VC rhymes which, as in Latin, are considered heavy for the purposes of stress placement³. It would appear that in Swedish, -VC became unacceptable as a heavy rhyme and was eventually eliminated (e.g., OSw skip 'ship' --> skepp; OSw spur 'trace' --> spår). No such thing takes place in OE, however, indicating this comparison between the two languages to be unjustified. While this argument cannot establish the weight of -VC syllables in OE, it does show that Lass' parallel is a misleading one and as such, provides no evidential value for the claim that -VC is quantitatively light.

- ii) OE morphological alternations of the type word-Ø -scip-u. Lass (1983: 154) makes the following comment:

there seems to be a phonologically conditioned alternation:

- a) If the stem ends in -VC, there is a suffix;
- b) If the stem ends in -VVC or -VCC there is no suffix.

Lass is clearly basing his initial analysis on

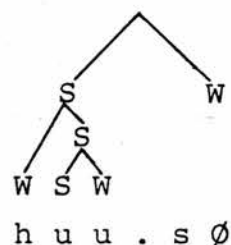
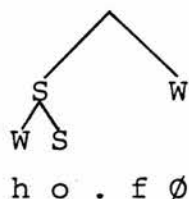
a morphological and not a phonological division. If we approach the problem from the point of view of syllable structure, a different generalisation emerges and we are not forced to adopt the assumption that the suffix is added after a -VC or light syllable.

The alternation in question is that found in masc. and neut. monosyllabic a-stem nouns where the nom., acc. plural inflection -u is lost after a 'heavy' syllable. Compare

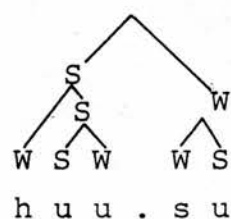
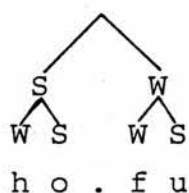
(2.13)	a.	<u>wor</u> d	'words'	b.	<u>scip</u> u	'ships'
		<u>bearn</u>	'children'		<u>geocu</u>	'yokes'
		<u>dēor</u>	'animals'		<u>godu</u>	'gods'
		<u>wif</u>	'women'		<u>hofu</u>	'dwellings'
		<u>hūs</u>	'houses'		<u>gebedu</u>	'prayers'

The absence of -u in (2.13 a) may be described either as a deletion after a heavy syllable, or as a non-addition. Both make the same generalisation about syllable structure, but the latter produces a more economical derivation. Let us look at both options.

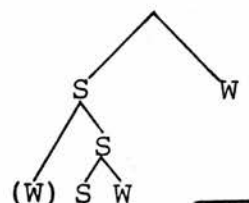
In Chapter 1, I argued for a rigorous initial maximalist syllabification which would produce the trees given in (2.14 a) below. After stress has been assigned in the lexicon (see Section 2.2 for details of this argument), the word form passes through the morphological component where derivational and inflectional morphology takes place. Let us suppose, informally, that a rule assigns the plural inflection -u to all masc. and neut. a-stem nouns, after which the syllabification is adjusted to produce the structures in (2.14 b).

(2.14) a. hofuhūs


b.

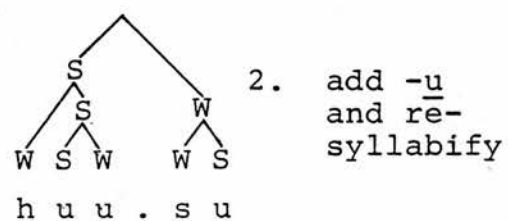
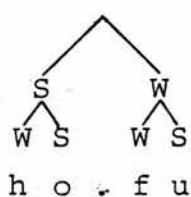
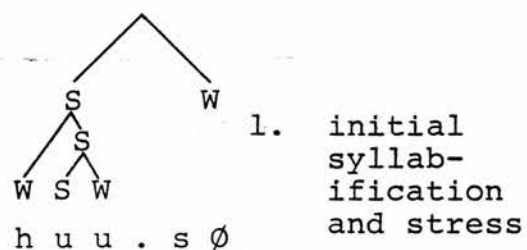
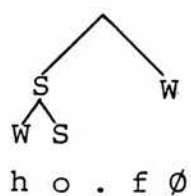
add -u

We then need another rule to delete the inflection in *hūsu, i.e., in the context:

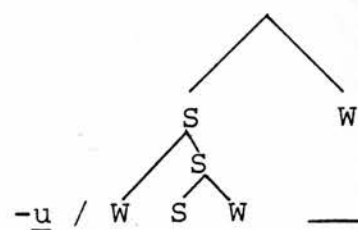
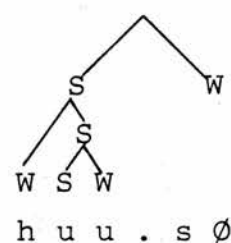


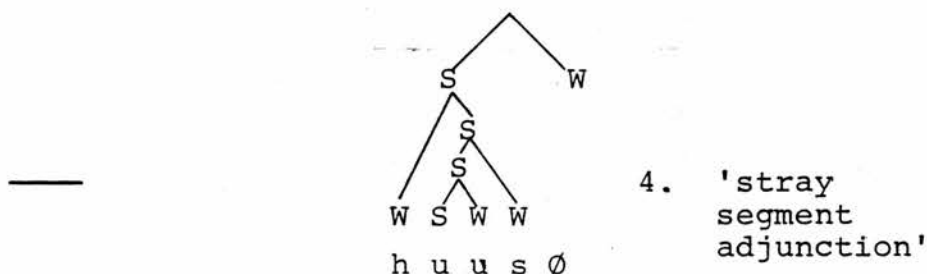
After this, a final resyllabification draws into the syllable any stray segments to its right. Complete derivations of hofu of hūs are given in (2.15). Notice that hofu is not affected by the deletion rule because its stressed syllable does not have the

 structure required by the domain of the rule.

(2.15) hofuhūs

3. delete



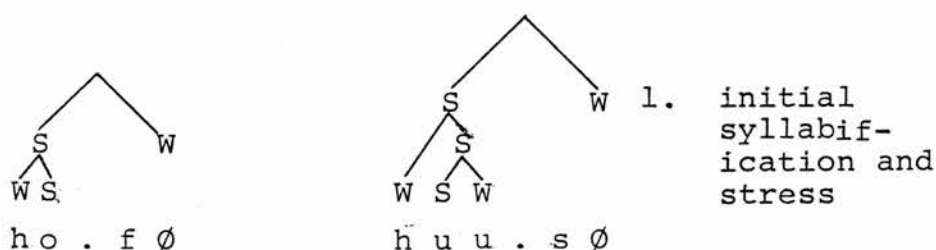


The derivation is made far simpler if the inflectional

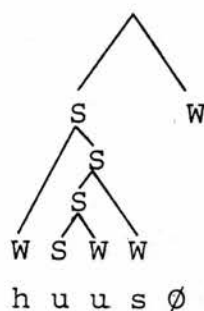
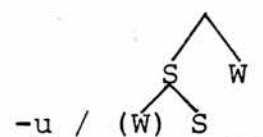
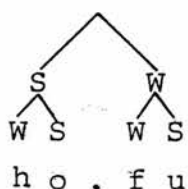
-u is only added in the domain (W) S __, in which case stage 3 in (2.15) is eliminated. There is no need to specify the presence of a filled onset to the second syllable (i.e., so that -u does not get added after a vowel) because there are no -V# lexical forms in OE due to a sixth century word-final vowel lengthening rule. I propose then, the following derivations for hofu and hūs:

(2.16) hofu

hūs



2. add

3. 'stray
segment
adjunction'

The important point is that this analysis has been able to capture a morphological alternation which is determined by phonological factors and do so by means of a purely phonological generalisation. It is dependent on syllable structure, namely, the difference between a light and a heavy syllable which is brought out by our syllabification rule. Notice that no matter which derivation we adopt ((2.15) or (2.16)), the alternation is predictable

on the basis of (W)S (V) being a light, and (W) S W (VV or VC) constituting a heavy rhyme. The lightness or heaviness of the stressed syllable is transparent

throughout the derivation. Compare this with an analysis like Lass' which takes -VC as light; while word is heavy, the addition of -u would make the first syllable light: *wor.du. A derivation which involved deletion of -u would be impossible as both stressed syllables would be analysed as light: ho.fu, *wor.du, and be expected to retain their inflection (but c.p. *hū.sū which is still analysed as heavy and loses it). The workability of an approach which involves inflection deletion - at least theoretically - is important since diachronically the inflection was present.

In view of this, -VC must be taken to constitute a heavy rhyme in OE, and as a consequence, the ability of monosyllables like hron, man etc. to fill metrical rises is naturally accounted for without resorting to devices like boundary shift. This analysis can also produce, by means of a vowel deletion rule operating after a heavy syllable, the alternation found in bisyllabic neuter nouns where the addition of an inflection causes the second, unstressed syllable to syncopate if the stressed syllable is heavy.

- | | | | |
|--------|----|------------------------|-------------------------|
| (2.17) | a. | <u>dēofol</u> nom. sg. | <u>dēofles</u> gen. sg. |
| | | <u>wundor</u> | <u>wundres</u> |
| | | <u>mynster</u> | <u>mynstres</u> |
| | b. | <u>werod</u> | <u>werodes</u> |
| | | <u>wæter</u> | <u>wæteres</u> |
| | | <u>duguþ</u> | <u>duguþes</u> |

Our initial maximal syllabification shows the examples in (2.17 a) to have heavy stressed syllables (where heavy = VV or VC), while those in (2.17 b) are light⁴. See also Lowenstamm (1981)

who treats examples like wæter and micel as cases of vowel epenthesis and whose account crucially depends on the initial maximalist syllabification proposed here.

- iii) the 'strong'/'weak' cluster distinction (SPE 1968). This is proposed in order to facilitate a formulation of the stress rule for non-compound words in ModE. Basically, in their terms, a strong cluster is VVC or VCC (Lass' heavy syllable). They find, however, that while /VrC/ is strong, /VCr/ is a weak cluster in that it does not attract stress, e.g., fratérnal, detérgent, but álgebra, lúdicrous. If, however, we involve syllable structure and an initial maximal approach, these anomalies are automatically ironed out: frater.nal, deter.gent, but alge.bra, ludi.crous and VC must be a 'strong' cluster. Furthermore, one cannot simply assume that a strong cluster in ModE, no matter how defined, will have the same composition as one in OE - especially after comparing ModE with Latin where stressed -VC is acceptable and saying that Old WGmc was different! (Lass 1983: 162 fn. 15). As it turns out, I would not wish to propose solely on the basis of this preceding argument, that OE -VC constituted a heavy syllable just because it does so in ModE and Latin: more conclusive arguments have been presented.

2.1.2 Ambisyllabicity in OE

2.1.2.1

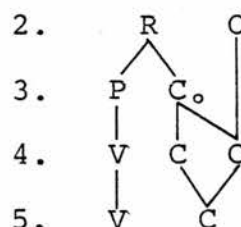
Lass introduces ambisyllabicity in order to create at tier 4 'pseudo geminates' of intervocalic consonants, the purpose of this being to make the stressed syllable heavy (i.e., VCC).

Thus a VCV structure would be interpreted as having the following syllable bracketing (2.18 a) and rhyme configuration (2.18 b). This notational device is involved again on the basis of an assumption that all stressed syllables which occur in the rise of a verse-line must be heavy.

(2.18) a.

[V[C]V]
1 2 1 2

b.

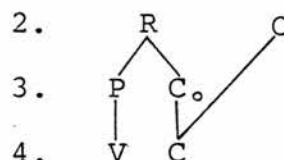


If my contention that VC is a heavy rhyme is correct, it seems that we can do away with the extra prosodic tier 4, but still need an ambisyllabic analysis where the intervocalic consonant 'belongs to' both syllables. Using Lass' notation, this would be represented as:

(2.19) a.

[V[C]V]
1 2 1 2

b.



The important question is, why do the stressed syllables of these structures have to be heavy? Furthermore, how does making VCV into V[C]V capture the generalisation that $\check{\sigma}\check{\sigma} \equiv \bar{\sigma}$ i.e., that two light syllables are metrically equivalent to one heavy? Recall that these are the structures which are resolved in the metre and they are treated in this way precisely because the stressed syllable is light. It is totally unnecessary and somewhat incorrect to want to make these syllables appear to be prosodically heavy - it in fact destroys

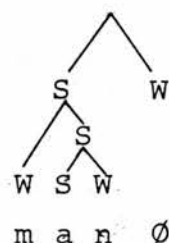
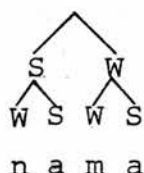
the equivalence! The notation and analysis I propose are able to capture the prosodic equivalence of

$$\check{\sigma} \check{\sigma} \equiv \bar{\sigma} \quad (\text{or in segmental terms } VCV \equiv VC(C)\#)$$

by assigning both a suprasyllabic $\begin{array}{c} \diagup \quad \diagdown \\ S \quad W \end{array}$ foot structure:

(2.20) nama

man



Both nama and man constitute a single foot even though their syllabic structures are different. I believe this to be the generalisation which is captured by the poetic convention of resolution (see Chapter 4 for a detailed discussion of the relationship that holds between syllabic and suprasyllabic structure).

2.1.2.2

Let us now look briefly at some other justifications for the introduction of ambisyllabicity into syllabic representations. Anderson and Jones' (1974, 1977) proposal is also, like SPE, based on an attempt to provide an adequate characterisation of a weak (light) syllable in order to formulate the ModE stress rule. They find, however, that the only support for this 'overlap' approach to syllabification is to be found

in the behaviour of [s] plus plosive clusters. They observe that although these clusters are permissible in word (and therefore syllable) initial position, they nevertheless behave like strong clusters in attracting primary stress to their preceding syllable, e.g., asbéstos, phlogístos, manifésto⁵. The main exceptions are words like módesty, índustry, etc., where the suffix -y shifts the stress onto the preceding syllable (c.f. SPE 1968: 40 ff. whose cyclic rules predict this stress pattern). On the other hand, [s] plus [l] clusters clearly do not attract stress to the preceding syllable even though an initial maximalist syllabification would allow these clusters as onsets in exactly the same way as the [s] plus plosive ones: compare légi.slative and asbé.stos. Anderson and Jones propose that invoking the terminating boundaries of syllables in the definition of the weak/strong distinction, will only make a difference if the end of one syllable does not necessarily coincide with the beginning of the next i.e., ambisyllabicity where allowed by the phonotactic rules of the language. So we get syllabifications like the following:

(2.21)	cine[m]a	alge[b]ra
	pentath][lon	descrip[t]ion
	asbe[st]os	legi[s]lative

The difference between [st] and [sl] is shown up by this syllabification. While [st] is both a possible terminating and initiating cluster, [sl] is not permissible in the coda. So while a single ambisyllabic consonant makes a syllable weak, two consonants in this position indicate it to be heavy. This definition must be modified to allow for final weak syllables where

the final consonant cannot be ambisyllabic, e.g.,
edit], credit], not*edi[t]. Their final formulation
 of the structure of a weak syllable emerges as

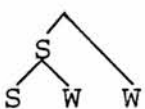
S([]C')(+)
 1 2 3 4 where 2 or 4 must be present
 (S = syllable nucleus)

We have no recourse to this type of evidence in OE for a number of reasons. Firstly, stress assignment is not sensitive to syllable weight, but falls on the first syllable of every morphologically simple word and on the first element of compounds (for a detailed discussion of OE stress, see Sections 2.2 ff.). Secondly, because [s] plus plosive clusters display a rather unusual and erratic behaviour, any conclusions based solely on evidence provided by them must be examined carefully. Typically, these clusters act as single units for the purposes of alliteration. Thus, while tr- alliterates with t- and not just tr-, sp- alliterates only with sp- and never with st- or s- (see Kohler 1967, Davidsen-Nielsen 1974, Kuryłowicz 1971). This might be taken to imply that such clusters are treated as units in initial position and that (according to the Law of Initials) they should be syllabified together in medial position too. Their behaviour with respect to syllable weight (and hence syllabification) however, is not so clearly defined. Recall the examples given in (2.17) of syncope of the unstressed second vowel in inflected strong noun paradigms when a heavy stressed syllable precedes. In general, this syncope takes place after an [s] plus plosive cluster implying that the stressed syllable is heavy (2.22):

(2.22)	nom. sg.	gen. plu.
	<u>ceaster</u>	<u>ceastra</u> (not * <u>ceastera</u>) 'town'
	<u>sweostor</u>	<u>sweostra</u> 'sister'
	<u>pistol</u>	<u>pistla</u> 'letter'

This is incompatible with the prediction made by our initial maximal syllabification which would produce cea.ster, sweo.stor and pi.stol and therefore not the heavy syllable needed to trigger the syncope.

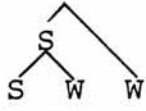
There is ~~no~~ other phonological evidence, however, which points to a syllable-initiating position for these clusters. The words in (2.23 a) are examples of an OE vowel shortening process in bisyllabic words with

a stressed syllable of the structure  (to be discussed in detail in Chapter 4). Traditionally, this change is described as taking place before two consonants - such an analysis cannot, however, account for the absence of shortening before clusters of [s] plus plosive. Consider the examples in (2.23 b):

(2.23)	a.	<u>cēpte</u>	-->	ME <u>kepte</u>
		<u>sōfte</u>	-->	<u>softe</u>
		<u>grētte</u>	-->	<u>grette</u>
	b.	<u>gāsta</u>	-->	<u>gāste</u>
		<u>māsta</u>	-->	<u>māste</u>
		<u>prēoste</u>	-->	<u>prēoste</u>

In this instance, initial maximalism can account for the

difference between (2.23 a and b): the syllabif-

ication of cēp][te produces a  structure which undergoes shortening, while gā][sta does not fit this description and is not therefore subject to the change. Although there are some cases of shortening before [st], e.g., fyste --> fyste, dūste --> duste, these are far less common than the unshortened forms. The OE evidence for the syllabification of [s] plus plosive clusters can thus be seen to be inconclusive; I see no valid reason therefore, for adopting an ambisyllabic analysis⁶.

2.1.2.3

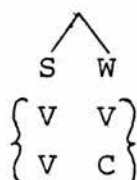
The other main justification given in favour of ambisyllabicity is a phonetic one - cases where an intervocalic consonant displays properties which are both coda-like and onset-like, e.g., aspiration, [l] - [ɫ], etc. (Anderson and Jones 1977, Hooper 1972, Kahn 1976). Other linguists have proposed ambisyllabicity for consonants lying between a stressed and unstressed syllable (Hooper 1978, Kahn 1976, Rudes 1977). On the basis of phonotactic constraints, Pulgram (1970) suggests the following modification to an initial maximal syllable division:

If a syllable cannot be kept open because its vowel does not occur in word-final position, then as many consonants as necessary - but no more - to provide the syllable with a permissible coda, thereby removing the vowel from syllable-final position, must be detached from the onset of the next syllable and transferred to the preceding syllable.

This condition can be adapted to an ambisyllabic approach as it is by Colman (1983) who, on the basis of unacceptability in OE of word-final short stressed vowels, proposes that medial consonants following such vowels be ambisyllabic, e.g., wi[n]e, dæ[g]es. This analysis receives support from experimental evidence from ModE (Fallows 1981) which shows that stressed lax vowels require to be in a closed syllable, while the preferred syllable shape for tense ones is CV. Fallows suggests that the low incidence of ambisyllabicity in her results may imply that it is a "strategy imposed when two rules are in conflict, as a way to satisfy both", e.g., when the maximal onset principle and the phonotactic constraints on stressed lax vowels both claim the intervocalic consonant (c.f. Section 1.1.1).

Recall, however, that in the present model, syllabification takes place prior to stress assignment and as such cannot make reference to whether a vowel is stressed or not - and since stress feet are assigned to syllables, it would seem counter-intuitive to reverse the order of the rules. Furthermore, if the view presented in this thesis is accepted, then the lengthening of word-final stressed vowels (which imposes the no-lax-vowel-in-a-stressed-open-syllable restriction) is accounted for in terms of the relationship between foot and syllable structure (see Chapter 4). A monosyllabic foot would require a coda if it is to be considered as at least roughly isochronous with a bisyllabic one. So a comparison of the structure of the stressed syllables of a mono- and a bi-syllabic foot may not be entirely desirable. The well-formedness of the structure of the rhymes may be determined more on prosodic grounds than entirely phonotactic ones, i.e., the rhyme of a bi-syllabic foot does not have to be as heavy as that of a monosyllabic.

I would therefore wish to maintain an underlying initial maximal syllabification, but keep open the possibility of a late readjustment rule which makes a consonant following a stressed short vowel ambisyllabic⁷. This model would have one advantage over the similar post-stress ambisyllabicity proposed by Hooper (1976, 1978), Kahn (1976) and Rudes (1977). Fallows (1981) points out that these analyses do not make a distinction between long and short stressed vowels in their assignment of ambisyllabic consonants. Her own experiments show, however, that ambisyllabicity is found only after short vowels and that the preferred syllable shapes are $\acute{C}\acute{V}V$ and $\acute{C}\acute{V}C$ (and not $\acute{C}\acute{V}VC$). Fallows' findings are predicted by our syllable template which has a branching rhyme for a heavy (stressed) syllable,



i.e., $\left\{ \begin{array}{cc} V & V \\ V & C \end{array} \right\}$. Again, it is worth pointing out that all this phonetic evidence for ambisyllabicity is based on the analysis of ModE where stressed syllables tend to be heavy and durational adjustments are phonetic rather than phonemic ones (as discussed in Chapter 4). For obvious reasons, we have no access to such evidence in OE.

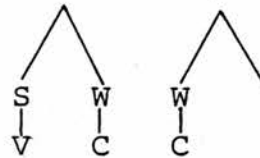
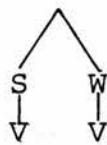
2.1.3 Geminate clusters

I would like to add a short note on the characterisation (within the metrical notation) of geminate consonant clusters. In line with the representation of long vowels as sequences of two identical vowel segments (see Chapter 1), I propose to handle geminate consonants as geminates or clusters of identical segments rather

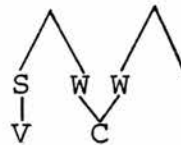
than as long consonants. This point deserves some attention in the light of the multiple attachment analysis proposed by Leben (1977) and Ingria (1980). Under this analysis each long vowel and consonant is specified as being associated with two positions in the syllabic tree, producing representations like those in (2.24 b) as opposed to the configurations in (2.24 a) which result from the geminate analysis.

(2.24) a. long vowel

long (geminate?) consonant



b.



Ingria points out that the difference between these two representations is that they make different empirical predictions. Specifically, the geminate approach predicts that each of the segments of a long vowel or consonant could undergo a process which does not affect the other. Kenstowicz and Pyle (1973) and Guerssel (1977) have pointed out that this is not generally the case and that there is, rather, a tendency to maintain the 'integrity' of geminate clusters, i.e., they always seem to behave as a single unit. Examples where a phonological rule applies to only one member of such a cluster are cases where a morpheme boundary intervenes between the two segments and where the multiple attachment

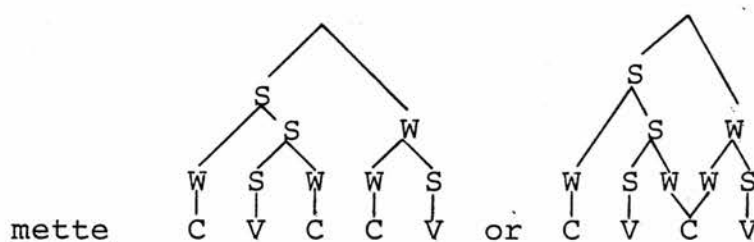
approach would predict the presence of a cluster rather than a single bimoric segment. On these grounds, one might favour a multiple attachment analysis which would treat morpheme internal 'geminate' as single bimoric

segments ($\begin{array}{c} W \\ \diagdown \quad \diagup \\ C \end{array}$), and those created at morpheme boundaries by processes of word-formation as clusters of

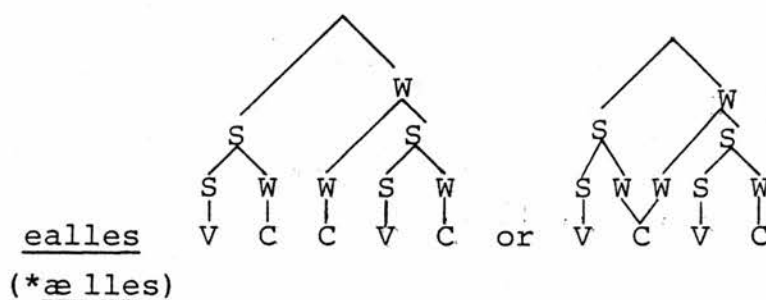
identical segments ($\begin{array}{c} \diagup \quad \diagdown \\ W \end{array}$; # $\begin{array}{c} \diagup \quad \diagdown \\ W \end{array}$;). In OE, I find no evidence to either support or refute this claim. We find examples of degemination both across morpheme boundaries (e.g., gyldenne --> gyldene, ōþerra --> ōþera, dīgellic --> dīgelic, reccenddom --> reccendom and where the geminate is part of the formative element (e.g., æmetig < amett#ig, inflected bæ rnetes - bæ rnett, byrþene - byrþenn). It could be argued, however, that this is a purely phonological process removing geminate consonants when they do not occur after a stressed vowel (notice that the surface form of byrþenn, etc. would have a final single consonant since geminates are not phonemic in this position - c.f. Section 2.1.1.2). Similarly, we get no help from processes like shortening before two consonants, (e.g., mētte shortens like cēpte) or breaking of /æ(:), e(:), i(:)/ before /l, r, x/ plus a consonant (e.g., healdan, eorþe, feohtas). Breaking is found before sequences of the geminate consonants /ll, rr, xx/, thereby showing that they are phonemic in this intervocalic position at the time of breaking, e.g., ealles⁸, wealles, steorra, iorre, hliehhan, tiohhan. But when the domains of these changes are analysed in terms of syllable structure rather than as sequences of

segments, we find that both the geminate and the multiple attachment analyses are equally predictive.

(2.25) a.

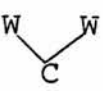


b.



As one might expect, therefore, the difference between the two approaches is not one that leads to different structural interpretations on the suprasegmental level since on that level the representations are identical.

There is one consequence of the multiple attachment analysis, however, which may not be entirely desirable for our data. The characterisation of geminate conson-

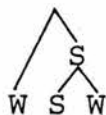
ants as  is tantamount to saying that they are to be interpreted as being ambisyllabic segments. I have already argued against any other form of (underlying)

ambisyllabicity in OE (Section 2.1.2) - should this be modified to allow it just in the case of geminate consonants? It is true that such a representation would reflect the fact that these segments only occur intervocalically after a short vowel; but this constraint can only be applicable once the morphological processes have been completed. For example, there are cases where stem-final geminates must be allowed to remain as such until these items have passed through the inflectional morphology. Consider the paradigms of adjectives like midd 'middle', nytt 'useful', gesibb 'related', which retain the geminate when followed by an inflection beginning with a vowel, but simplify the cluster finally and if the inflection has an initial consonant.

(2.26) midd (masc.)

Sg.	midd	Plu.	midde
	midne		midde
	middes		midra
	middum		middum

The stem midd- would enter the inflectional morphology component with its syllable structure already assigned. If we assume a geminate analysis and initial maximalism,



this structure would be $m\ i\ d][d$. It is difficult to see what the equivalent structure in the multiple attachment analysis would be. Firstly, we cannot place the syllable boundary before the geminate because it is not permissible in syllable onset position; nor, for the same reason, would a syllable final position be

acceptable, i.e.,

$$* \begin{array}{c} \wedge \\ W \ S \\ \swarrow \searrow \\ m \ i \end{array} [d]$$

$$* \begin{array}{c} \wedge \\ S \\ \swarrow \searrow \\ W \ S \ W \\ \swarrow \searrow \\ m \ i \ d \end{array}$$

Secondly, we obviously cannot place the boundary in the middle of the segment, so we are forced to posit ambi-

$$\begin{array}{c} \wedge \\ S \\ \swarrow \searrow \\ W \ S \ W \ W \\ \swarrow \searrow \\ m \ i \ d \end{array}$$

syllabicity for this final segment: m i [d]. One might argue that this is analagous to syllabifying a consonant as the onset of a non-existent (or a zero) syllable. The position is not exactly the same, however. Notice that without initial maximal syllabification, the 'extra-metrical' segment is assigned no metrical structure until the addition of a nucleus to which it can be a sister. With a multiple attachment analysis, one cannot do this as the ambisyllabic segment must be associated with two positions, so either we are going to end up with a W node with no sister, i.e.,

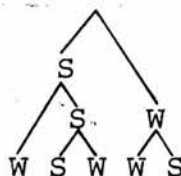
$$\begin{array}{c} \wedge \\ S \\ \swarrow \searrow \\ W \ S \ W \ W \\ \swarrow \searrow \\ m \ i \ d \end{array}$$

which violates the condition on binary branching within the tree; or we will have a segment attached

$$\begin{array}{c} \wedge \\ S \\ \swarrow \searrow \\ W \ S \ W \ _ \\ \swarrow \searrow \\ m \ i \ d \end{array}$$

to an unlabelled node: m i d . I think that both options are unacceptable within the present framework

given the conditions on tree building outlined in Chapter 1. In the case of the geminate approach, the extrametrical consonant would be labelled only once it has been syllabified as an onset to an inflect-



ion beginning with a vowel: m i d d e. Should there be no inflection added, or if the inflection has a consonant as its first segment, a degemination rule in the phonology would operate to simplify the geminate cluster, thereby bringing it in line with the observation that geminate consonant phonemes are only found intervocalically in OE⁹.

Another reason for adopting the geminate analysis would be for the sake of consistency. I proposed in Chapter 1 to treat long vowels and diphthongs as sequences of two vocalic segments, i.e., VV. Clearly, the multiple attachment method could be applicable in the case of vowels as well as consonants. In the former instance, however, we can quite definitely say that one member of the vowel cluster can undergo a change that the other does not. Take, for example, the diphthongisation of a long vowel as in the vowel shift of /i:/ --> /ei/ --> /aI/ (Lass and Anderson 1975: 192). This involves a change in the height of the first member of the geminate (long) vowel: /ii/ --> /ei/. Similarly with monophthongisation processes like those that took place in late OE, e.g., /æ:a/ --> /ææ/. It is hard to envisage how this would be done under a multiple attachment analysis in such a way as to reflect that one part of the vowel remains the same while the other changes. I propose therefore, to continue with a geminate analysis for long vowels, diphthongs and geminate consonants.

2.2 Stress Assignment

2.2.1 Primary stress

Our main source of evidence for the establishment of the stress patterns of OE is the metre of the alliterative poetry of the period. Each line of the verse must contain two or three words (at least one in each half-line), of which the onsets of the stressed syllables alliterate:

- (2.27) Scýl^ˈdes eafera, Scéde^ˈ-landum in Beo. 19
 cwēn^ˈ Hroð^ˈgāres, cýnna^ˈ gemyndig Beo. 613
 brím^ˈ-clifu blīcan^ˈ, beórgas^ˈ stēape Beo. 222
 ís^ˈig ond út^ˈ-fūs, æþel^ˈinges fær Beo. 33

Those syllables which have alliterating onsets occur in the rise position of the line and it is claimed that they can do so by virtue of the fact that they bear the primary stress of the word. In the case of compounds, it is the first element whose stressed syllable onset alliterates showing this to be the location of primary stress. (Optionally, the second element may also alliterate indicating the semantic integrity of the two parts). The claim that alliterating syllables are not simply the first ones of the word, but those which carry the main stress, is borne out by the observation that in certain prefixed words, the alliterating segment is the first one of the stem:

- (2.28) þone þīn^ˈ fæder^ˈ tō gefeohte^ˈ bæ r Beo. 2048
 betlīc^ˈ ond bān^ˈ-fāg^ˈ tobrēcan^ˈ meahte Beo. 780
 weān^ˈ onwēndan^ˈ; wæs^ˈ þæt^ˈ gewīn^ˈ to
 swýð Beo. 191

On the basis of these metrical criteria, we can establish

that primary stress in a word generally falls on the first syllable of the stem. The main exceptions to this are prefixed nouns and adjectives where the main stress is 'retracted' onto the prefix, leaving what Halle & Keyser (1971; henceforth, HK) call 'subsidiary' stress on the stem, e.g., ándgiet 'intelligence', tóhýht 'hope', fórwýrd 'destruction', þúrhbeòrht 'very bright', þúrhwàcol 'very watchful'. HK's reason for attributing the presence of subsidiary stress to the stems of such words appears to lie in the fact that they exhibit palatal diphthongisation in the appropriate contexts (c.f. Campbell 1959: paragraph 185). Since diphthongisation took place only in the presence of stress, it is claimed that both the verb ongietan 'to understand' and the noun ándgiet 'intelligence' must have some degree of stress on the second syllable.

This is not the only possible interpretation of these facts, however. Firstly, there is the possibility that with the appropriate rule ordering one can get round the problem. In other words, if palatal diphthongisation applied to word stems before prefixation took place, then the question of 'subsidiary' or secondary stress does not arise. Such an approach would entail that stress assignment initially take place before prefixation (because palatal diphthongisation only operates under stress) and then reapply cyclically. This is one of the options discussed in Section 2.2.1.3. Secondly, one may argue that nominal forms are derived from the corresponding verb, but this would be difficult to show for all the cases concerned. And consider, for example, ándswarian, a verbal form with stress on the prefix which would seem to imply a denominal verb. Therefore, one might perhaps do better to examine more closely than HK do, other sources of evidence for secondary stress,

andgiet from the reduced one (ongietan) and also makes the claim that the former is a deverbal noun. HK provide no justification for adopting this approach: it is simply a consequence of their analysis.

(2.31) [[and#giet]]		
	V N	
	1	ISR
—		SRR
<hr/>		
	1	ISR (vacuous)
1	2	SRR and SLC

The authors later observe that retraction applies not only to nouns, but to adjectives as well. The rule is therefore modified accordingly so as to produce forms like ándfenge 'acceptable', ánsund 'entire', sámmæ̀le 'agreed'.

It is worth noting that while the HK analysis reflects the grammatical predictability of OE stress by making reference to morphological boundaries rather than to syllabic structure, the notation they employ under the SPE framework is nonetheless essentially phonological in character. A formalism which has no recourse to notions such as C and V might perhaps be more appropriate in reflecting the purely morpho-syntactic nature of stress in OE. Such an alternative is not available within the SPE model which always has to make reference to segmental properties and morphological boundaries in its rule formulation. A suprasegmental approach to stress, however, could overcome this problem by making use of phonological categories like the syllable: the stress rule would assign primary stress to a morpheme initial syllable, with the appropriate constraints being expressed in morphological terms. Such an analysis will be considered in detail in the following Section.

A further problem for HK's analysis is presented by nouns which are clearly derived from verbs and which therefore have unstressed prefixes, e.g., forgífness 'forgiveness', alýsing 'redemption'. Forgífness surfaces from the addition of a suffix -ness to the verb stem forgíf-. Since there is no form *gífness in OE, there is no doubt that the verbal form is not derived from the noun. Compare this with examples like ándgiet and tóhyht mentioned above. The corresponding verbal forms are ongietan and hyhtan - in both categories the root is identical (giet-, hyht-) and there is no principled way of predicting whether the verb is formed from the noun or vice versa. In these latter examples, the above mentioned 'retraction' of the stress from the stem onto the prefix takes place. Forgífness and alýsing show no such retraction, however. It would appear then that the SRR only applies to forms which are assigned final stress by HK's ISR, so that we get retraction in final stressed [and#gíet] but not in [for#gífness]. (Notice that this would imply the derivation of forgífness from a non-existent stem, *gífness).

On closer inspection, however, we find that the stipulation of final stress in words that are subject to the SRR, is not in fact a true generalisation. Consider, for example, words like ándsaca 'apostate', bígenga 'inhabitant', æfþunca 'source of offence' where the stress is retracted from a bisyllabic form with penultimate stress. While rule (2.30) can cope with forgífness (retraction applies when the primary stress is followed by consonants only and not by another syllable), it has to be modified in order to prevent declensional suffixes blocking stress retraction. HK propose that a diacritic [+B] be assigned to all declensional and conjugational endings in order to differentiate them from derivative suffixes and prevent the former from blocking retraction.

The reformulated SRR is given in (2.32):

(2.32) Stress Retraction Rule

$$V \rightarrow [1 \text{ stress}] / [C_0 \text{ ______ } X \# C_0 \left[\begin{array}{c} 1 \text{ stress} \\ V \end{array} \right] C_0 (C_0 \left[\begin{array}{c} V \\ +B \end{array} \right] C_0)] \{N, A\}$$

An additional problem for the HK analysis is raised by a number of prefixes (ge-, be-, for-) which never take stress and would therefore have to be marked as exceptions to rule (2.32). Furthermore, while such prefixes prevent retraction in nouns and adjectives such as gefeóht 'battle', geþýld 'patience', gemét 'fitting', behýdig 'careful', fordemedness 'condemnation', they do not do so when themselves preceded by another prefix. Consider, for example, úngemet 'unfitting', únbesēondlic 'incomprehensible', únbehēfe 'not suitable' and únforcūð 'dishonest'.

This would require one to posit a condition that ge- block retraction only when word-initial. Optionally, such cases may be handled cyclically by allowing the SRR to 'jump over' the unstressable prefix and retract the stress to un- in the usual way:

(2.33)

[[[un#ge#met]]]
V Adj Adj

1	ISR
—	SRR
<hr/>	
1	ISR (vacuous)
— 1	SRR (inapplicable)
<hr/>	
1	ISR (vacuous)
1 2	SRR and SLC

The matter is also complicated by cases like geþýldig 'patient' and ungeþýldig 'impatient'. In the former,

retraction is blocked not only by ge-, but also by the derivative suffix -ig (recall rule (2.32)). In ungeþyldig, however, the SRR would have to operate since un- is a prefix which is always stressed. If ge- were somehow marked as being unstressable the only way of allowing retraction of the main stress onto un- would be to mark the suffix as [+B]. This is clearly an undesirable option since one would have difficulty justifying in phonological or morphological terms the different treatment of an identical suffix in two related adjectival forms. The root of the problem again seems to lie in the fact that HK have to rely on a segmental analysis. They try to capture the stress behaviour of morphologically complex items in terms of their segmental make-up, i.e., whether the primary stress is followed by consonants only, or by another vowel as well. The generalisations about OE word stress could perhaps be better captured in purely morphological terms since the prefixes which attract stress are in no way definable with respect to their phonological composition, or indeed that of other parts of the stem. In Section 2.2.1.3 I suggest an alternative approach which can handle the discrepancies noted above by making reference to morphological properties.

HK handle compound stress by proposing a Compound Rule which assigns primary stress to the first element of any compound word:

(2.34) Compound Rule (CR)

$$\begin{bmatrix} 1 & \text{stress} \\ & V \end{bmatrix} \rightarrow [1 \text{ stress}] / [##X_Y##Z##]_{\{N,V,A\}}$$

This rule would handle cases like æfter-spȳrian 'to inquire', for which a sample derivation is given in (2.35 a).

Such compounds differ from examples like ándgiæt and ongíetan in that æfter is not a prefix but an adverb. By virtue of belonging to a major lexical category, æfter would be assigned a primary stress in its own right. Arguably prefixes like on- and ofer- (e.g., in ofergān) may also stand independently as prepositions in a sentence, but since these are not members of a lexical category, the ISR does not apply to them and in derivational morphology they are treated as affixes. Compare the derivations in (2.35 a and b):

(2.35) a. [# [æfter#] [#spyrian#] #]
 Av V V

1	1	ISR
1	2	CR

b. [ofer#gān]
 V

1	ISR
—	SRR

A fuller discussion of compounding is presented in Section 2.2.3.

To summarise then, HK propose three rules, ISR, SRR and CR as well as a number of exception diacritics in order to capture the regularities of stress placement in OE. I have pointed to some of the difficulties which arise in handling the data within the SPE model (and notice also that HK make no mention of the possibility of secondary stress on suffixes - something which our study of OE metre will bring to light in Section 2.2.2). In the next Section, I shall begin to develop an alternative morphologically based analysis of OE stress, in which prominence relations will be defined within the metrical phonology

notation outlined in Chapter 1.

2.2.1.3

Much of the recent work in generative grammar has concentrated on an investigation of the scope of the lexicon. It has been proposed under the lexicalist hypothesis that the lexicon be expanded to contain not only lexical entries, but also the rules governing word formation (Chomsky 1970) and word stress (Siegel 1974, Selkirk 1980). Furthermore, the lexicon is said to consist of an ordered set of domains which have been called strata (Mohanalan 1982) or levels (Siegel 1974, Allen 1978) at which specific processes take place. Siegel observes that affixes in ModE may be divided into two classes with respect to their morphological and stress behaviour. Class I affixes (e.g., in-, de-, -ion, -al, -ity) shift the main stress of the non-complex word and the word-formation processes involving them are ordered prior to the assignment of word stress. Class II affixes (e.g., un-, -ness, -less, -full), however, are stress neutral and any affixation involving them takes place after stress assignment. Compare the examples in (2.36 a) and (2.36 b):

(2.36) a.	oríginal	b.	yéllowness
	perféction		pówerless
	humánity		untrúthful

It would seem, from what has been said about OE stress in the preceding section, that OE prefixes at least might be conducive to such a classification. Recall that, while in nouns and adjectives the stress is 'retracted' from the stem onto the prefix, in verbs and adverbs the prefix remains unstressed:

(2.37)

- | | | | | | | | |
|----|--------------------|----|------------------------|----|--------------------|----|-------------------|
| a. | <u>æf</u> unca | n. | 'source of
offence' | b. | of <u>þýn</u> can | v. | 'to
displease' |
| | wi <u>þersa</u> ca | n. | 'adversary' | | wi <u>þsá</u> can | v. | 'to
refuse' |
| | <u>ýmbry</u> ne | n. | 'course' | | <u>ymbhweó</u> rfa | v. | 'to go
round' |

By adopting an analysis like that proposed by Siegel, it would be possible to have two sets of OE prefixes - one nominal/adjectival and the other verbal/adverbial, with the attachment of the former preceding stress assignment, and that of the latter following.

Campbell (1959) provides a short list (paragraph 73) of prefix doublets, each with a stressed and an unstressed member:

- | | | | | | | |
|--------|----|-----------------|-----|----|-------------------|------|
| (2.38) | a. | <u>stressed</u> | (I) | b. | <u>unstressed</u> | (II) |
| | | <u>æ</u> - | | | <u>a</u> - | |
| | | <u>æf</u> - | | | <u>of</u> - | |
| | | <u>æt</u> - | | | <u>ot</u> - | |
| | | <u>and</u> - | | | <u>on</u> - | |
| | | <u>bī</u> - | | | <u>be</u> - | |
| | | <u>or</u> - | | | <u>a</u> - | |
| | | <u>uþ</u> - | | | <u>oþ</u> - | |
| | | <u>wiþer</u> - | | | <u>wiþ</u> - | |

If we call the stressed prefixes Class I, and the unstressed ones Class II, and posit three levels within our lexicon (the first for Class I prefixation, the second for stress assignment, and the third for Class II prefixation) we would be able to derive the correct stress contours for derivations via prefix. In (2.39) I give a sample derivation:

(2.39)	a.	<u>ǣ</u> f <u>þunca</u>	b.	of <u>þýncan</u>
level 1.		[[ǣ f] [þunca]]		[þyncan]
2.		[[ǣ f] [þunca]] N		[þýncan] V
3.		[[ǣ f] [þunca]] N		[[of] [þýncan]] V

A class I prefix like ǣ f- is attached at level 1 and is therefore present when the stress rules assign primary stress to the first syllable of the word at level 2. In (2.39 b), however, only the unprefixed form is available at the time of stress assignment which results in a primary stress on the root syllable.

With an OE Stress Rule that assigns primary stress to the first syllable of any word at level 2, prefixed nouns and adjectives would therefore correctly surface with stress on the prefix while verbs and adverbs which are as yet unaffixed at this level, would receive stem-initial stress. There are, however, a number of problems with this approach. Firstly, recall that there are certain OE prefixes which are either always stressed (e.g., un-) or always unstressed (e.g., ge-, be-) irrespective of the syntactic category of the stem to which they attach. Superficially, it might appear that these really pose no problem at all - they are simply listed under Class I and Class II respectively:

(2.40)	<u>Class I prefix</u>	<u>Class II prefix</u>
	<u>únār</u> n. 'dis-honour'	<u>geláng</u> n. 'dependent on'
	<u>únārian</u> v. 'to dis-honour'	<u>gelángian</u> v. 'to send for'
	<u>únæ ð ele</u> adj. 'base'	<u>geféoht</u> n. 'fight'
	<u>únæ ð elian</u> v. 'to debase'	<u>geféohtan</u> v. 'to fight'

Class I prefixClass II prefix

beswícend n. 'deceiver'

beswícan v. 'to deceive'

Difficulties arise, however, when these prefixes are stacked. Words like úngeþyld 'impatience', úngebeaten 'unbeaten', únbefohten 'undisputed', únbehēfe 'unsuitable' would pass through level 1 unprefixes (ge- and be- are Class II), get stress assigned and then be prefixed at level 3. It is only after the prefixation of ge- and be- that un- can be attached, but at this stage in the derivation (i.e., level 3), the prefix un-, being Class I, is no longer available. A possible solution might be to make the rules in the lexicon 'cyclic', so that after level 3, Class I prefixes would again be available for affixation and the stress rule would reapply for the second time at level 2. The notion of the cycle, however, is perhaps not totally appropriate in this context, and the operation might be better described in terms of Mohanan (1982) and Halle and Mohanan's (1985) 'loop'. They make use of this device to allow the output of one level to be the input of an earlier level - in our case, the output of level 3 would be the input to level 1. Consider (2.41) which shows the steps such a derivation would involve:

(2.41) ungeþyld 'impatience'

- | | |
|---------|-----------------------|
| level 1 | [þyld] |
| 2. | [þýld] |
| 3. | [[ge][þýld]]
N |
| 1. | [[un][ge][þýld]] |
| 2. | [[ún][ge][þýld]]
N |
| 3. | _____ |

Notice that the word would surface with two primary stresses - *ungeþýld - which is clearly undesirable. We would require some kind of SLC which operates without stress numbers to reduce the second stress of the word: ungeþýld (assuming the claims that have been made about secondary stress are correct - c.f. Section 2.2.2).

I find the introduction of the loop to deal with the phenomena of stacking in a restricted number of cases (stacking of two stressed, two unstressed or a stressed preceded by an unstressed prefix obviously will not require such a process) , a rather unjustifiable step to take. It becomes increasingly so when we consider that by having a loop from the last level back to the beginning, we allow an item to pass through the entire derivation twice (or more). This in effect defeats the whole purpose of level-ordering and the predictions it is supposed to make about word-formation.

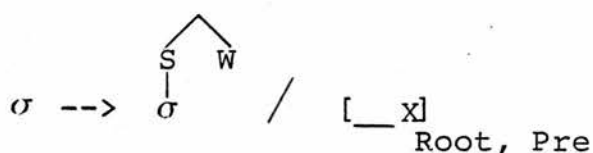
If, having rejected both the use of the cycle and the loop device, we still want to produce secondary stresses on the roots of prefixed nouns and adjectives, we would need a rule which in effect does the job of Halle and Keyser's SRR. Since at the point where stress is assigned such lexical items would already have been affixed (recall nouns and adjectives take Class I prefixes), the ISR would assign no stress to the root syllable but just primary stress to the initial syllable - the prefix.

The simultaneous assignment of primary and secondary stresses could be handled by a reformulation of the stress rule so that it makes reference to morphological information rather than segments. Let us assume that all morphemes in the lexicon are bracketed and labelled thus: [__]_{Pre} , [__]_{Suf} , [__]_{Root} , etc. Stress is

assigned to syllables (σ) rather than segments and is

relationally defined in terms of branching trees as described in Section 1.2.1. The foot structures thus produced would be grouped into a right-branching word-tree (a formulation of this Word Rule will be given shortly). The OE stress rule might then look something like this:

(2.42) OE Stress Rule (i)



I use the σ symbol not to represent a prosodic category (c.f. Selkirk 1980), but rather just to indicate the top node of any existing metrical structure. Since syllabification and stress assignment are extrinsically ordered such that the former is the earlier process, it is to the top node of this previously erected syllable structure that σ refers.

No category labels (e.g., [] X]) need be inserted to
Pre NA

specify that only those prefixes which are going to derive nouns and adjectives can be stressed, because at level 2 where the stress rule applies these are the only prefixes present; verbs and adverbs being prefixed at level 3 correctly surface with stress on the root. Compare the following derivations:

(2.43) a. andgiet

1. [[and] [giet]]
Pre Root

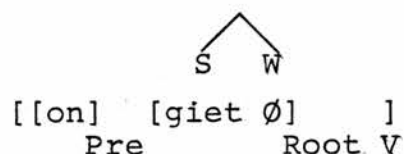
2. $\begin{array}{c} \swarrow \quad \searrow \quad \swarrow \quad \searrow \\ S \quad W \quad S \quad W \\ | \quad | \quad | \quad | \\ \text{[and } \emptyset \text{] } \text{[giet } \emptyset \text{] } \\ \text{Pre} \quad \text{Root N} \end{array}$

b. ongietan

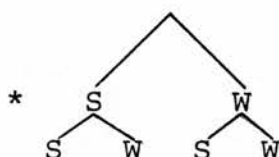
[giet]
Root

$\begin{array}{c} \swarrow \quad \searrow \\ S \quad W \\ | \quad | \\ \text{[giet } \emptyset \text{] } \\ \text{Root} \end{array}$

3. —



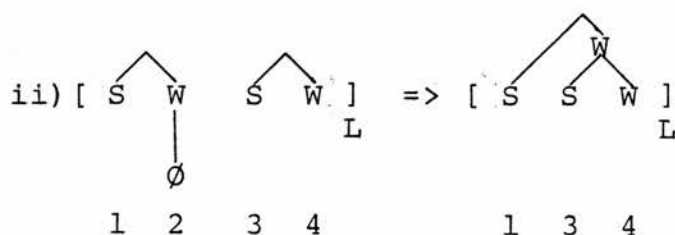
Recall our stipulation that all monosyllables occur with a zero syllable to their right so that the strength relations can be expressed by means of the usual binary branching tree. However, we would not want a form like andgiet to surface from the lexicon with a word-internal



zero syllable: and Ø giet Ø . Our word rule must therefore specify that in gathering the feet erected by the OE stress rule into a right-branching tree, it must eliminate all internal zero syllables. This word rule would apply at level 2 after the application of the stress rule, and may be stated as follows:

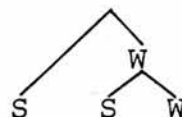
(2.44) OE Word Rule¹⁰

- i) Working from right to left, in a pair of nodes $[N_1 N_2]$, N_1 is Strong



where L = a lexical category

As a result of the application of this rule, the metrical



structure of andgiet at level 2 would be: andgiet ∅ .

This correctly predicts primary stress on the prefix and a secondary stress on the root syllable of the word. The word-final zero syllable is not subject to deletion because there is no immediately following S node in the same word. In cases like ongiet-, the prefix has no metrical structure since it was not subject to the stress rule. The Word Rule need not, therefore, be ordered after level 3 affixation, as all metrical structure has already been assigned by level 2. Ongietan will surface as



ongietan after the addition of the inflection. As pointed out in Chapter 1, such an initial unstressed syllable will constitute a W node of the preceding foot in connected speech:



_____ ongietan.

It is argued in Section 2.2.2 that subordinate stress is to be found on all derivational suffixes. I pre-empt the discussion a little to point out that our OE Stress Rule can handle this, assuming that suffixes are present at level 1 and are therefore available to undergo stress assignment. The domain of the rule given in (2.42) would have to be amended to [__X]. The derivation

Root, Pre, Suf

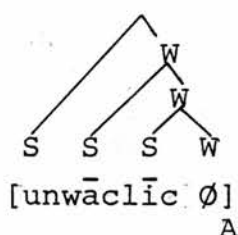
of unwāclīc 'not weak, steadfast' would be:

(2.45) unwāclīc

1. [[un] [wāc] [līc]]
 Pre Root Suf



2. [[un \emptyset [wāc \emptyset [līc̣ \emptyset] OE Stress Rule
 Pre Root Suf A



OE Word Rule

3. _____

Justification for this analysis will be presented in Section 2.2.2.

While the analysis given above works nicely for much of the OE data, it still does not solve the problem of stacked stressed plus unstressed prefixes. Recall the case of *ungeþyld*. Unless one can motivate a rule which at level



3 inserts ge between un Ø and byld Ø, the problem remains. Furthermore, while it is true that level ordering can produce secondary stresses where appropriate, it does have a rather serious drawback in handling the deverbal nouns like alýsing and forgífness discussed above. It was pointed out that these forms retain the original stress pattern of the verb even after prefixation. This in itself poses no

problem as the prefixes, being Class II, would not be present until level 3. Like HK's analysis, however, we would be forced to posit a derivation where the suffix is added before the prefix, creating a non-existent base form and obscuring the fact that the noun is derived from a verb.

(2.46) forgifness

1. [[gif] [ness]]
 Root Suf

2. S W S W
 / \ / \
 2. [[gif Ø] [ness Ø]]
 Root Suf

OE Stress Rule

- W
 / \
 S S W
 [gifness Ø]

OE Word Rule

- W
 / \
 S S W
 3. [[for][gifness Ø]]
 N

- W
 / \
 S S W
 [forgifness Ø]
 N

One possibility would be to have suffixation take place only after both prefixation processes have been completed (say, level 3a). As a direct consequence of this the OE Stress Rule would have to be modified to either apply twice (once at level 2 and again at level 3a), or else it would have to be restated in such a way that the domain of the application of the rule to prefixes is more specific, i.e., $[[\text{Pref } N, A] \text{ } X]$. In this latter case, the

stress rule would be allowed to operate whenever its conditions were met (because if its domain were still restricted to level 2, suffixes would remain stressless). I feel that both these options would create unnecessary complication and furthermore the analysis would then fail to capture the generalisation that suffixes behave like Class I prefixes in attracting some degree of stress. Ideally, therefore, the model should predict that they are both available for affixation at the same level.

There is one important distinction, however, between the derivation proposed above and the original motivation behind Siegel's proposal of level ordering. The formulation of the OE Stress Rule given in (2.42) succeeds in producing the desired primary and secondary stresses in morphologically complex words, but it necessarily applies to unaffixed elements - the actual word-formation is done by the Word Rule after stress assignment. All that was claimed is that Class I affixes are present at level 2 while Class II are not. In view of this, the former type of affix cannot be said to affect stress in the same way as Class I's do in ModE (Siegel 1974) and German (Giegerich 1985), for example. In these languages Class I affixes are subject to the regular operation of the Main Stress Rule after they have been attached to words and stems, i.e., the complete affixed item is treated by the Stress Rule as a single string. This peculiarity may be put down to a difference in the operation of the OE and ModE

stress rules (the latter being a Latinate rule which is phonologically conditioned). After all, the most important observation about Class I affix behaviour - the fact that they may bear the main stress of the word - is still valid.

Before continuing, therefore, let us examine more closely the distribution of OE prefixes. It turns out that this is not as clear-cut as Campbell's list (2.38) would lead us to believe. There are, for example, many instances of the supposedly stressed nominal prefixes appearing as unstressed verbal ones, e.g., ætspyrning 'offence', ætspurnian 'to go wrong', ætberan 'to bear'. It is not clear in such cases whether the base form is the noun or the verb, but nonetheless the stress pattern is in keeping with what we would expect on a surfacing noun or verb. In this respect, these examples are noticeably different from those words which are undoubtedly either deverbal (e.g., forġifness) or denominal (e.g., ándswarian). Campbell gives other examples where the stressed and unstressed forms of the prefix are identical: ofer-, to-, þurh-, under-, ymb-. One could handle this by placing such prefixes in both Class I and II. But how then would the word-formation rules pick out the correct one at the appropriate level? Siegel's (1974) analysis treats ModE prefixes which behave similarly (e.g., auto-, re-, sub-) in this way i.e., as belonging to both Class I and Class II. In ModE this does not create any difficulties, however, because one is able to make the generalisation (as Siegel does), that while Class I's may attach to both words and stems, Class II prefixes may only be added to words. As the prefixes which can occur in both classes only attach to stems when Class I (refuse) and only to words when Class II (rewash), no problem arises.

The important point that emerges from the above discussion is that there is nothing inherent in the OE prefixes which

makes them either stressed or unstressed (with the exception of ones like un-, ge-, be-, etc. whose behaviour has already been discussed). Rather the stress pattern is dependent on the syntactic constituent formed by the word-formation processes - if it is a noun, the primary stress falls on the prefix; if a verb, the root retains the stress. As the stress is determined by the category of the constituent formed and not that of the one to which the prefix is added (this would not even be possible as OE prefixes attach to roots which have no category labels), we cannot formulate an analysis like Siegel's in which Class I prefixes would be specified as nominal or adverbial affixes while Class II would only be added to verbs and adverbs. Furthermore, central to Siegel's hypothesis is the observation that ModE has two types of boundary: + and #. While Class I affixes are introduced by the + boundary, Class II have the # boundary. The latter behaves like a word boundary and blocks the application of the stress rules and a number of other phonological rules (see SPE pp. 85-86). There is no such justification for positing two boundaries in OE¹¹: as I have pointed out, stress placement is determined by considerations of syntactic category and with regard to other phonological rules, we find that all OE prefixes (and to a large extent, suffixes too) behave in the same way.

Consider, for example, the phenomenon of OE fricative voicing which takes place word-medially between voiced segments - initially and finally, and in gemination they are realised as voiceless allophones.

(2.47)

a.	<u>sāwol</u>	'soul'	[s]	b.	<u>fōt</u>	'foot'	[f]
	<u>mūs</u>	'mouse'	[s]		<u>līf</u>	'life'	[f]
	<u>māst</u>	'most'	[s]		<u>sceaft</u>	'shaft'	[f]
	<u>mæsse</u>	'mass'	[s]		<u>pyffan</u>	'to puff'	[f]

but

<u>hasu</u>	'grey'	[z]	<u>seofon</u>	'seven'	[v]
<u>rīsan</u>	'to rise'	[z]	<u>drīfan</u>	'to drive'	[v]
<u>hūsł</u>	'Eucharist'	[z]	<u>hræfn</u>	'raven'	[v]

What is interesting is that prefix-final fricatives, like word-final ones, are voiceless as are fricatives which occur as the first segment of a root but nevertheless between two voiced segments if a prefix precedes.

(2.48)	<u>mislædan</u>	v.	'to mislead'	[s]
	<u>misdōn</u>	v.	'to do evil'	[s]
	<u>forswerian</u>	v.	'to forswear'	[s]
	<u>misdæd</u>	n.	'evil deed, sin'	[s]
	<u>onsacan</u>	v.	'to deny'	[s]
	<u>andsaca</u>	n.	'apostate'	[s]
	<u>wiþlædan</u>	v.	'to lead away'	[θ]
	<u>þurhfōn</u>	v.	'to penetrate'	[f]

Notice that it makes no difference whether the prefixed form is a noun or a verb, in other words, the division of prefixes into Class I and II suggested in (2.38) does not appear to be relevant here. Clearly, what is relevant is the presence of a boundary between the prefix and the root. Since the effect that this boundary produces with respect to voicing is the same as a word boundary, we can assume that it is in fact a # boundary. The rule of fricative voicing may be stated as not operating in the context of #, and in this way we can simultaneously handle, for example, #sawol, mūs#, and mis#lædan.

To a large extent, we find the same behaviour with derivational suffixes, i.e., voicing is blocked. Consider:

(2.49)	<u>wynsum</u>	'pleasant'	[s]
	<u>felafeald</u>	'manifold'	[f]

<u>wunderfull</u>	'wonderful'	[f]
<u>ungeh̄yrsum</u>	'disobedient'	[s]

By comparison, we find voicing does take place before inflectional suffixes which implies a difference between the two - the former occurring with a # boundary, and the latter with + (e.g., rīs + an, wulf + as). However, it seems to be the case that when the fricative concerned is root-final rather than suffix initial, later ME spelling evidence and ModE phonology suggest that voicing did take place e.g., OE bysig 'busy', dysig 'foolish' [z], lūflīce 'lovely', ungelēaflic 'incredible' [v], unmǣðlice 'wickedly' [ð]. The spelling evidence is inconsistent, however, and what is more, can only be verified in the case of the [f] <f> - [v] <u> alternation. The generalisation which seems to arise is that <u> is used when a vocalic element occurs between this fricative and the suffix, e.g., luueliche as opposed to lefliche; leuemon - lefmon. I suggest that spellings like leuliche are analagous with forms with a vowel before the suffix and that gradually the voiced allophone was generalised in all voiced contexts¹². Whatever the reason and period for this spread of the voicing environment, I do not think these examples constitute any real counterevidence to my claim that all OE affixes are introduced with a # boundary and that there is therefore no justification for positing two classes of affix. This claim is based on the fact that it is not the presence of certain suffixes which induces voicing while others do not, but rather that there may be other conditioning factors (such as the presence of a vowel) which determine whether it is the voiced or voiceless allophone which surfaces before any one suffix.

It would appear, then, that all OE affixes may be characterised with a # boundary which under Siegel's classification, would make them Class II and therefore affix-

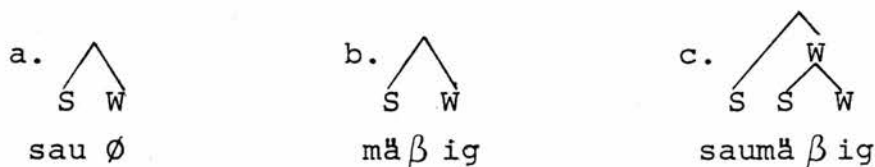
able after the stress rule has operated. Again, however, the correlation is not straightforward: Siegel's Class II affixes cannot attract stress, some of our OE affixes do.

While level ordering has enabled us to assign stress in OE by making reference to only morphological information, it has become clear that it is not any inherent morphological characteristic of the affixes themselves which determine whether or not they are stressed. As such then, their division into two classes is unjustified. Nor, however, can they all be ordered either before or after the stress rule as it stands at present. Recall that the stressed or unstressed surfacing of any one affix is determined by the syntactic category of the word which is formed as a result of the affixation process. I propose therefore, that the OE Stress Rule be amended to incorporate lexical category symbols to indicate that only those prefixes which attach to roots to form nouns and adjectives are subject to this rule. The stress patterns which emerge would be purely morphologically conditioned not only because the stress rule makes no reference to phonological segments, but also because the main stress of the word is determined by the order in which the various stressed affixes are attached to the root. Predictably, therefore, the un- of unandgytfull 'unintelligent' would bear the primary stress of the word, coming as it does, before any other element and thus reflecting the central principle of OE stress: initial stress (except of course in the case of specific prefixes already discussed).

The important point that emerges from all this, however, is that in ModE the Class II affixes (those attached after stress assignment) include all the native OE ones, while the non-native ones which enter the language at a later stage can be found in both Class I and Class II

(see Chapter 3 where this point is taken up and developed). I think this provides good justification for the analysis I am about to propose; justification which is further backed by data from German. Giegerich (1985) points out a similar division of German suffixes into non-native (Class I) and native (Class II). Interestingly, it is proposed that those native suffixes which are stressed receive metrical structure at the point in the derivation where the stress rule operates but are only actually attached to words and stems after this stage. Consider, for example saumäβig 'hideous' where the stem and suffix are assigned metrical structure separately and then (2.50 b) is attached to (2.50 a) to produce (2.50 c):

(2.50)



Notice that this is identical with the way in which OE suffixes have been handled in the analysis presented above (c.f., for example, (2.45) and (2.46)).

The preceding discussion has shown that merely listing OE affixes under two separate classes is an inappropriate way of handling the data. The proposal which has already been touched upon and which I develop below, is one in which the Siegel type of level ordering plays no part. All word-formation takes place after the operation of the OE Stress Rule (which will be reformulated), and all formative elements are subject to this rule which assigns each one the appropriate metrical structure. The resulting feet will be grouped together by the Word Rule at the

time of word-formation. This approach not only eliminates the problems raised in the earlier part of this Chapter, but also predicts naturally the situation which exists in ModE derivational morphology (i.e., that all the native (OE) affixes attached after the application of the stress rule) is a direct consequence of the history of the language.

2.2.1.4

Let us turn now to the details of this proposal. Staying within the framework of the lexicalist hypothesis, I propose that all OE formatives are bracketed entries in the lexicon. Roots and morphologically simple words will be bounded by one pair of brackets while affixes will have two, the second of which will be labelled so as to indicate the lexical category which will be formed through such an affixation. Examples of these lexical entries are given below:

(2.51) a. roots and words

[giet]	[swar]	[wāc]	[þync]
[hūs]	[midd]	[nēah]	[werod]

b. suffixes

[X[ing]]	[X[ness]]	[X[ig]]
N	N	A
[X[full]]	[X[līc]]	[X[līce]]
A	A	A

c. prefixes

[[and]Z]	[[wiþer]Z]	[[æf]Z]
N,A	N,A	N,A
[[on]Z]	[[wiþ]Z]	[[of]Z]
V,Av	V,Av	Av

Notice firstly that there is no need for morphological labels such as Root, Prefix, Suffix as these are distinguished by their distinctive bracketings: affixes are specified as to whether they attach to a preceding or a following element. Secondly, the class of lexical item which will result from such an affixation is indicated by the label of the second pair of brackets. Those prefixes which combine to form both nouns and verbs will be given two entries (e.g., $[[\text{under}]Z]_{N,A}$, $[[\text{under}]Z]_{V, Av}$) with different labels and the word-formation processes will pick out the appropriate stressed or unstressed form in the course of the derivation.

Our OE Stress Rule can now make reference to lexical categories and thereby capture the essentially morphologically determined nature of stress placement in OE. A new version of this rule is given in (2.52) below:

(2.52) OE Stress Rule (ii)

$$\sigma \rightarrow \begin{array}{c} \swarrow \quad \searrow \\ S \quad W \\ | \quad | \\ \sigma \quad \sigma \end{array} / ([X] [__Y] (<Z>)) \quad \langle N, A \rangle$$

The OE Stress Rule assigns stress - in the metrical notation the S node of a branching tree - to each formative listed in the lexicon which meets with its requirements. Roots and words are covered by the non-optional part of the rule (with Y allowing for bisyllabic forms):

$$\begin{array}{c} \swarrow \quad \searrow \\ S \quad W \\ \text{[werod]}. \end{array}$$

The expansion of the rule with the variable X allows for

stress on suffixes: $\begin{array}{c} \swarrow \quad \searrow \\ S \quad W \\ \text{[X[ing } \emptyset \text{]]}. \end{array}$ And the other possible
N

expansion, with the Z variable, assigns stress to prefixes. The angled brackets are essential in order to ensure that where Z is present, so too are the labels N,A , so that only those prefixes which produce nouns and adjectives



receive stress: $[[\text{and } \emptyset]Z]$. In this way, each formative
N,A

enters the word-formation component with its metrical structure already assigned - the only exceptions are those lexical entries bracketed as $[[__]Z]$, which are not
V,Av

covered by rule (2.52) and therefore cannot be given metrical structure. In this way, the surfacing of stressless verbal and adverbial prefixes is ensured. Sample derivations are given in (2.53):

(2.53) a. wiþersaca 'enemy'

b. wiþsacan 'to oppose'

lexical
entry

$[[wiþer]Z]$ [sac]
N,A

$[[wiþ]Z]$ [sac]
V,Av

level 1
OE Stress
Rule (2.52)

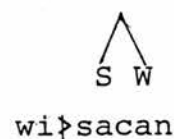
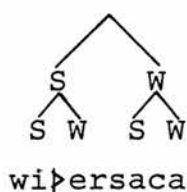
$[[wiþer]Z]$ [sac \emptyset]
N,A

$[[wiþ]Z]$ [sac \emptyset]
V,Av

level 2
Affixation
and Word
Rule (2.44)

[wiþer sac \emptyset]
N

[wiþ sac \emptyset]
V



Aspects of inflectional morphology will be dealt with in Sections 2.2.2.2 and 2.2.4 - let us assume for the moment that they are added after the derivational morphology has been completed. The trees are erected according to the rules of foot construction and then organised by the Word Rule into a right-branching tree. Subordinate stresses are correctly indicated by the embedded feet.

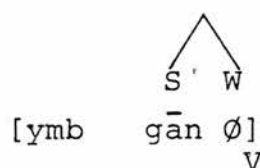
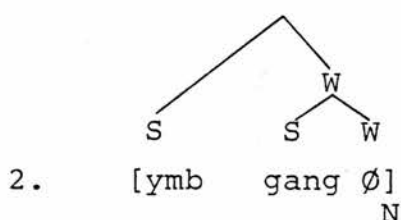
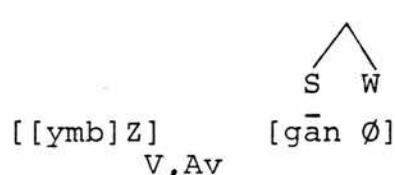
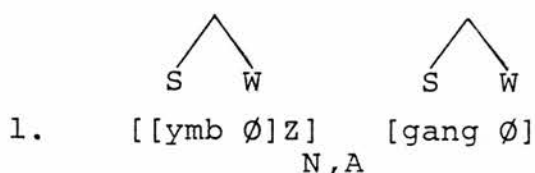
This analysis is capable of handling all the cases which are problematic for the level ordering approach outlined in Section 2.2.1.3. Firstly, prefixes with identical stressed and unstressed forms are automatically dealt with through the labelling convention and the stress rule. Consider the examples in (2.54) where the prefix ymb- is assigned metrical structure when specified as attaching to a noun or adjective, but not when affixed to a verb or adverb.

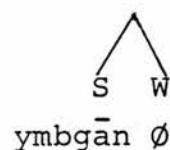
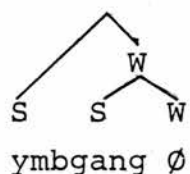
(2.54) a. ymbgang 'circuit'

b. ymbgān 'to go around'

[[ymb]Z] [gang]
N,A

[[ymb]Z] [gān]
V,Av





Secondly, stacked prefixes pose no problem either. Be- and ge- may be listed in the lexicon as $[[be]Z]$ N,A,V,Av and will automatically fail to undergo the stress rule as this makes no mention of the category V. Un- will have to be specified as always being S. The correct pattern could of course be produced cyclicly as discussed earlier, but I see no advantage of introducing the cycle merely to deal with this small group of prefixes. Alternatively, all three may be dealt with by means of a low-level rule of the kind in (2.55):

- (2.55) $[[un]Z]$ N,A,V,Av $-->$ S
 $[[ge]Z]$ N,A,V,Av $-->$ W
 $[[be]Z]$ N,A,V,Av $-->$ W

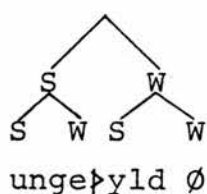
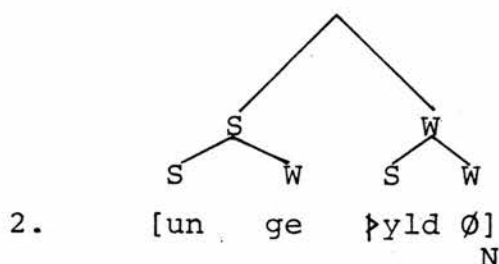
The derivation of ungeþyld would be as follows if the first alternative were adopted:

- (2.56) ungeþyld 'impatience'

$[[un]Z]$ N,A,V,Av $[[ge]Z]$ N,A,V,Av $[þyld]$



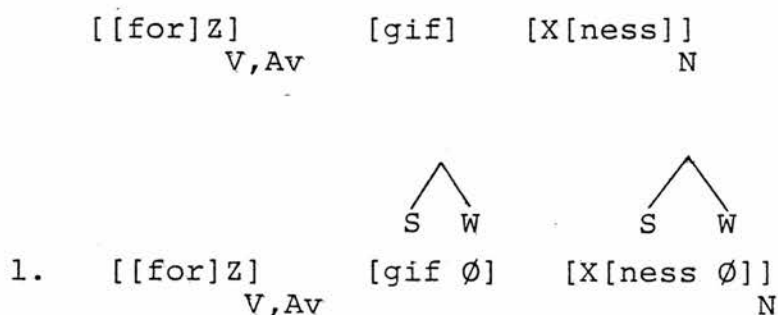
1. $[[un \ Ø]Z]$ N,A,V,Av $[[ge]Z]$ N,A,V,Av $[þyld \ Ø]$

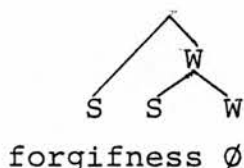
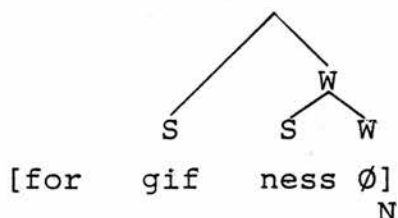
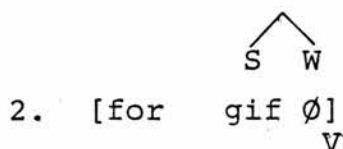


I prefer this alternative because in cases where (as in (2.56)) ge- and be- are not word-initial, the foot template will automatically determine that they are correctly assigned a W node. Where they occur initially, no metrical structure will be assigned them in the lexicon.

Thirdly, the morphology ensures that the instances of deverbal nouns are derived in the correct order, i.e., verb first and then the noun via suffix, without producing the wrong stress contour. Consider the derivation of forgifness in (2.57).

(2.57) forgifness 'forgiveness'





This analysis then, succeeds in accounting for the OE data by means of two simple rules - the OE Stress Rule (2.52) and the OE Word Rule (2.44) - which apply in the lexicon. There is no need for cyclicity or for a division of the affixes into two classes. As yet no justification has been given for the subordinate stresses in OE words which this analysis produces. We turn now to this rather controversial problem.

2.2.2 Secondary stress

2.2.2.1

Traditional accounts of secondary stress (or half-stress) in OE crucially depend on the evidence provided by the metrical system. Secondary rises are found in three of Sievers' types: Da (/ / \ x), Db (/ / x \), and E (/ \ x /), but the linguistic material that may fill them is less constrained than in the case of primary rises.

This refers mainly to the observation that syllables filling secondary rise positions need not be heavy or resolved, nor do they alliterate. The distribution of secondary accents in the metre is taken to reflect the linguistic situation with regard to secondary stress¹³.

I will firstly outline the account of secondary stress in OE given by Campbell (1959: paragraphs 87-92) and then go on to a fuller discussion of the issues involved. Campbell distinguishes the following categories:

- a) Compounds whose elements both retain their independent semantic force and have secondary stress on the root of the second element.

- (2.58) góldwlanc 'proud with gold'
wældr^èor 'blood of slaughter'
gámolf^èax 'grey-haired'
Ángelc^{yn}n 'English nation'
ærendw^{rè}ca 'errand-teller'

- b) Those compounds where the second element no longer conveys a distinct transparent meaning (often reflected in a modified spelling form indicating, for example, reduced or shortened vowels and loss of consonants, e.g., hlāford 'lord' < hlāf-weard, literally 'guardian of the bread'), generally only receive secondary stress when disyllabic (either originally or through inflection).

- (2.59) frēondscipe 'friendship'
wæstmb^ære 'fruitful'
hīwr^æden 'family'
hwīlwende 'temporary'

<u>in</u> widda	'enemy'	but	<u>in</u> wit
<u>hlā</u> fordes	'lords'	but	<u>hlā</u> ford
<u>Hrō</u> þgāres	'Hrōþgār's'	but	<u>Hrō</u> þgār
<u>wis</u> dōme	'wisdom'	but	<u>wis</u> dōm
<u>lū</u> flīce	'lovely'	but	<u>lū</u> flīc

Similarly with: -cund, -fæst, -feald, -full, -hād,
-lāc, -lēas, -sum, -weard, -wist, -līc.

- c) When followed by an inflection, the following also have secondary stress: heavy derivative suffixes -els, -end, -erne, -estre, -ing, -ung, -ness (and it would seem some light ones too: -en, -er, -ig, -oþ (-eþ), -ol); the present participle -ende; the inflected infinitive -enne; the superlative -est, -ost; and the medial -i- and -od- of Class II weak verbs.

The half-stresses in both b) and c) must additionally be preceded by a heavy syllable or its metrical equivalent (˘x):

(2.60)	<u>æ</u> þelinges	but	<u>cý</u> ninges
	<u>sé</u> alfodes		<u>wú</u> node
	<u>sí</u> ngende		<u>wé</u> sende
	<u>hú</u> ntoþe		<u>fá</u> roþe

It will be immediately evident that this condition may simply be a consequence of the metrical convention requiring the ictus to be filled by heavy syllables (or their equivalents). So, for example, the suffix -ing in cýninges would not be free to fill an ictus (and thereby bear stress) because it is required by the metre to resolve the first syllable: cýninges. Since, as has already been pointed out, the weight of a syllable is

not linguistically relevant in the assignment of primary stress, we may be justified, in the absence of any evidence to the contrary, in taking this restriction on the occurrence of secondary accent as another aspect of the same metrical convention and perhaps not relevant in the determination of linguistic stress. The various conditions on the eligibility of a syllable to fill a secondary rise will be taken up in the discussion that follows.

Let us look firstly at the claim that the suffixes in b) and c) must be followed by another syllable if they are to qualify for an ictus. Campbell offers no explanation why this should be the case, but his reference to Huguenin's (1901) study of such stresses in Anglo-Saxon throws some light on the matter. In his paragraph 1, Huguenin points out that a syllable capable of taking secondary accent may be utilised either in the arsis (2.61 a) or in the thesis (2.61 b) of the line:

- | | | | |
|--------|----|--|------------|
| (2.61) | a. | widcū ^ˈ ð ^ˈ ne ^ˈ weān ^ˈ | Beo. 1991a |
| | | fæ ^ˈ der ^ˈ flēttgēsteald ^ˈ | Gen. 1611a |
| | b. | ōnd ^ˈ sē ^ˈ frumgar ^ˈ hīs ^ˈ | Gen. 1183b |
| | | ānræ ^ˈ d ^ˈ oretta ^ˈ | Aud. 983a |
| | | dēadcwēalm ^ˈ Dēnigea ^ˈ | Beo. 1670a |

He concludes that a "potential" secondary stress which occurs between two arses, or between an arsis and a pause at the end of a verse, is suppressed. (Note that Huguenin's use of 'accent' is equivalent to our 'linguistic stress' and his term 'stress' equals our 'accent').

Such syllables do not belong to the stress-scheme of the verse. Since these syllables - under other conditions capable of secondary stress - are on account of their environment no longer available for ictus, they must be

in accentuation below the grade of the usual secondary stress. Consequently, relative suppression of the potential secondary accent will take place only when this accent occurs between two stresses, or between a stress and a pause at the verse end.

(p. 8)

Huguenin concludes that the syllabic environment causes a certain "mechanical effect" which may be overcome "by the demand for a logical accent, i.e., an accent dependent on morphology" and that "a syllable capable of secondary accent does not always bear a metrical ictus."

It is striking how closely this view is echoed by Cable (1974) in his reanalysis of the five Sievers types. He proposes the following condition in an effort to distinguish between linguistic stress and metrical ictus:

- (2.62) Condition: A syllable can bear metrical ictus only if it has greater linguistic prominence than at least one adjacent syllable.

He states that although -wulf in

['] ^x ^x ^x ^x ['] ^x
 Gyreðe hine Beowulf Beo. 1441b

may linguistically have secondary stress, it fails to meet the condition for metrical ictus because it is not followed by a more weakly stressed syllable.

Both Cable and Huguenin have pinpointed the central problem, namely, that there is not necessarily a one-to-one correspondence between linguistic stress and its representation in the metre. I feel that some justification for this assumption lies in the fact that the rules of metre which determine which syllables may qualify to fill a secondary rise are too complex, and the results they

produce too variable, to be linguistically realistic. Since primary stress is not quantity-sensitive (in spite of the metrical conventions) and is strictly morphologically defined, what grounds are there for assuming a more complex set of rules for secondary stress?

The question, however, still remains: how far do the metrical conditions on the occurrence of secondary stress reflect the linguistic situation? Are we to conclude that forms like wīsdōm and wīsdōmes discussed in b) above, both have secondary stress on the suffix, or that neither have it?

In stating the rules for the position of secondary stress, Sievers (1893: paragraph 78) distinguishes between heavy and weak secondary stresses. The second member of a transparent compound takes a heavy secondary stress and is as a rule always accented in the metre. The root-syllable of the second element of compound proper names and short medial suffixes may or may not be accented in the verse and can therefore bear only a weak secondary stress. In later OE the secondary stress on long medial suffixes may also be neglected bringing this group under the weak stress category as well. Final suffixal syllables are capable of occurring in a secondary rise (e.g., æþeling manig) but are normally unaccented, as are the final syllables of obscured compounds. By implication, Sievers has a four-way stress distinction: primary, heavy secondary, weak secondary and unstressed.

Bliss (1958: paragraphs 30-32), in discussing Sievers' classification, points to the latter's implicit recognition of the difference between the secondary stress on derivative endings and that in compounds. Bliss then proposes that secondary stress which cannot be ignored be termed 'secondary', while that which can, 'tertiary' stress

"without prejudice to the possibility that 'tertiary' stress may in fact prove to be equivalent to lack of stress" (paragraph 31). He proposes that secondary stress is found only "in compounds whose meaning can be deduced from the meaning of its elements both of which also occur as independent words." The proviso that both elements occur as independent words is necessary to differentiate between primary compounds like Angelcynn 'English nation' on the one hand, and obscured compounds and prefixed elements (e.g., uncūþ 'unknown') on the other. In the latter, the elements cannot occur separately and therefore cannot have secondary stress even though one can deduce the meaning from the sum of the two parts.

Bliss provides statistical information to justify his claim that the distinction between secondary and tertiary stress is of metrical significance (paragraph 33) and that secondary stress is more prominent and recognisable and therefore used more in accented positions in the metre. He also proposes that since there is no real difference in the behaviour of syllables with tertiary stress and those without stress, that these be classed together in the metrical system that he outlines for OE verse. In an appendix (see Bliss, 1958, Appendix A for details), he presents certain phonological arguments, based on a refutation of Luick's (1921) claim of the existence of 'Nebenakzent' on long medial syllables, in favour of this claim that there are no grounds for assuming secondary stress on medial (derivative) syllables and that phonologically they behave as syllables with no stress.

The point made by both Sievers and Bliss, that there is a clear distinction between the treatment of secondary stress in compounds and that on suffixes, is an important one to which I will return later in distinguishing compound structures and derivational affixes. The claim

that there is no difference between syllables with tertiary and those without stress, requires immediate comment, however. This is clearly not the case whether Bliss is speaking in metrical or in linguistic terms. Metrically, completely unstressed syllables like inflectional endings can never fill rises, whereas syllables with 'tertiary' stress sometimes can. Linguistically it may be true on a phonological level that one cannot distinguish between weakly stressed and unstressed syllables because their vowels are subject to similar realisation rules. However, the data we are concerned with here (i.e., primarily OE suffixes) exhibit characteristics associated with the presence of stress; specifically, they may contain diphthongs and long vowels. It is by no means clear whether the vowels in suffixes like -līc, -lēas were synchronically long in OE. Campbell's proposal that these vowels were shortened under low stress (i.e., -lic, -leas) is unhelpful because of its circularity. The claim is based on his suggestion (see 1 b) and c) above) that only disyllabic suffixes may carry a secondary stress - a word-final monosyllabic uninflected suffix may not: -līce but -lic.

If primary stress in OE is morphologically determined, in the absence of any real evidence to the contrary, I think that it would be highly likely that secondary stress is similarly determined. If this were the case, underlyingly at least, any formative that is stressed in one of its forms will be stressed in all of its possible forms. The occurrence of diphthongal forms in suffixes but not in inflections indicates that these two classes of affix must have a different stress behaviour. Additionally, the reduction and confusion of vowels in unstressed syllables is not characteristic of OE suffixes implying that they bore some degree of stress.

Recalling Huguenin's and Cable's observations I would

like to propose that while all linguistic stresses need not be reflected in the metre, a rise on the other hand, can only be filled by a syllable which has some degree of stress. This is implicit in Cable's condition (2.62): a syllable can only have greater linguistic prominence than an adjacent syllable if it has a greater degree of stress, and this is what qualifies it for a metrical rise. Since suffixes can sometimes fill rises, I would claim that in the lexicon they bear stress. In a system such as OE where stress is morphologically determined, once a formative is assigned stress by the rules in the lexicon, it must be stressed underlyingly in each of its forms. In other words, if the first syllable of -dōmes or -līce may fill a metrical rise, then it must have linguistic stress and by the above reasoning, so too must -dōm and līc. This of course does not exclude the possibility of stress subordination and stress reduction on the surface. This may be done within the metrical framework employed here by means of a defooting rule (cf. Giegerich 1985, for example) which would have the effect of eliminating a word-final zero syllable and thereby its sister node as well, after a

string of terminal S nodes, i.e.,

S S S W --> S S W.

 ∅

The relevance and details of such a rule in OE will be discussed shortly. Firstly, however, let us look at the suitability of the metrical notation for reflecting the information about stress given us by the metre.

Cable shows, very conclusively I think, how his system of OE metrical patterns is superior to those proposed earlier in that it describes not only those patterns which occur, but also accounts for why no others do.

His notation reflects the principle of relative stress which holds between adjacent units in the metre such that it is of no metrical consequence whether a rising contour realises phonetic $\times \angle$, $\times \wedge$, or $\times \succ$ (where \wedge = intermediate/weak/tertiary stress). Thus he can collapse the two Sievers' types D_b ($\angle \angle \times \succ$) and E ($\angle \succ \times \angle$) into one: 1. \ 2. \ 3. / 4. (The numbers represent metrical positions and the lines connecting them either rising or falling stress contours. That is, whether the syllable of one position has greater or lesser prominence than its neighbour). Where clashing stresses occur (C and D lines) the first stress is interpreted as being the stronger. Notice that in this way, Cable imposes no absolute value on the degree of stress borne by each syllable, which is appropriate in the light of the inconclusiveness of the metrical evidence.

The notation of Metrical Phonology captures in linguistic terms what Cable's analysis expresses about the metrical patterns of OE. Specifically, the relationship between one syllable and its neighbour is expressed in terms of relative prominence such that any degree of stress on a syllable is only evident through its adjacency to another syllable which is weaker in prominence. Underlying linguistic structures with non-primary stress on an uninflected derivative suffix, may be subject to a surface defooting rule which would reflect not only the variation in the occurrence of such syllables in rise positions, but also the rhythmic alternation characteristic of stress-timed languages.

2.2.2.2

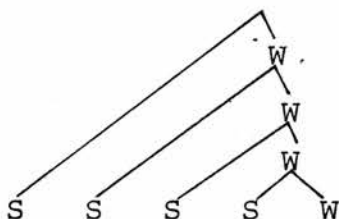
Let us examine now how the analysis of OE proposed in Section 2.2.1.4 reflects the observations made above about the correspondence between metrical and linguistic prominence contours. Recall that it was argued that

each formative, appropriately bracketed, is found as a separate entry in the lexicon and is assigned stress by the OE Stress Rule (2.52). Justification has been given for the suggested stress patterns of prefixes and the existence of a degree of (subordinated) stress on derivative suffixes. Through similar argumentation to that offered for suffix stress, subordinate stress on the root syllables of prefixed nouns and adjectives can be posited. Consider the following lines from Beowulf:

- | | | |
|--------|-----------------|-------------------|
| (2.63) | Wiht únhæ̃ lō̃ | <u>Beo.</u> 120b |
| | ætgræ̃ pe wear̃ | <u>Beo.</u> 1269b |
| | andlangnẽ dæg | <u>Beo.</u> 2115b |

The metre requires a secondary rise on each of the positions occupied by a prefixed root. Such roots may contain a long vowel or diphthong and show reflexes of phonological processes which only take place under stress. After the operation of the OE Stress and Word Rules the metrical structures which surface are right-branching trees which, if the word is morphologically complex, may comprise any number of embedded binary metrical feet like the one in (2.64):

(2.64)



As LP point out, there is nothing inherent in this relational representation which is directly relatable with the notion of 'degrees of stress'. There can be no local interpretation of S and W made directly available by the tree. They initially propose an algorithm which in effect

simply mimics the stress numbers of earlier theories.

- (2.65) If a terminal node \underline{t} is labelled \underline{W} , its stress number is equal to the number of nodes that dominate it, plus one. If a terminal node \underline{t} is labelled \underline{S} , its number is equal to the number of nodes that dominate the lowest \underline{W} dominating \underline{t} , plus one.

(LP 1977: 259)

LP do not, however, adopt this algorithm as it is inappropriate to the metrical convention of relational representation. Instead, they make use of the metrical grid which in effect measures strength by means of a linear representation. The reader is referred to LP (pp. 311 ff.)

The convention which has now generally been adopted, however, and which I propose to follow, is that suggested by Kiparsky (1981) and quoted in (1.5), which simply defines one node as stronger or weaker than its sister. For example, in a structure like (2.64), we get a gradual decrease in prominence from the first syllable as subsequent subtrees are dominated by an increasing number of \underline{W} nodes. Below in (2.66) I give examples of OE forms derived via suffixation. Recall that one of the expansions



of the OE Stress Rule (namely $\sigma \rightarrow \sigma / [X[_ Y]]$) will assign prominence relations to suffixes which will then be affixed to the root - or to a preceding suffix - in accordance with the OE Word Rule. Specifically, any word-internal zero syllables will be eliminated during the derivation.

(2.66) a. hǣlness 'salvation'b. ǣþeling 'nobleman'[hǣl] [X[ness]]
N[ǣþel] [X[ing]]
N1. OE
Stress
Rule

[hǣl] [X[ness]]
N

[ǣþel] [X[ing]]
N

2. OE
Word
Rule

[hǣl] [ness]
N

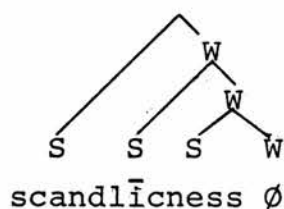
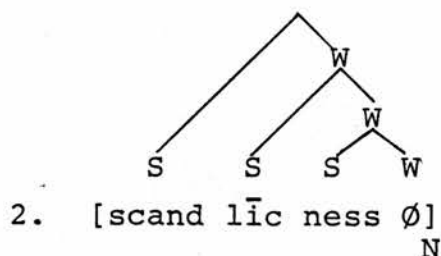
[ǣþel] [ing]
N

hǣlness

ǣþeling

c. scandlicness 'shame'[scand] [X[līc]] [X[ness]]
A N

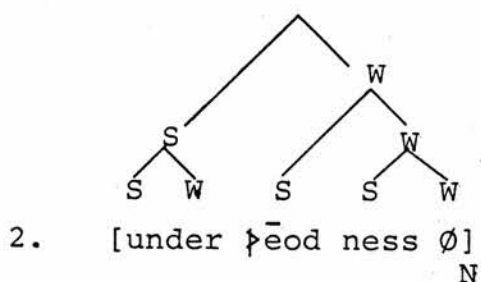
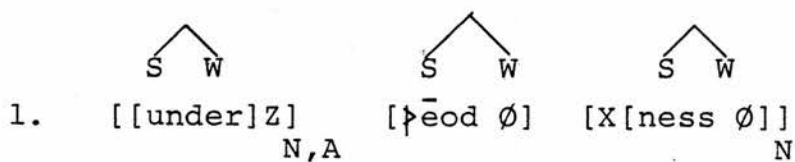
1. [scand] [X[līc]] [X[ness]]
A N

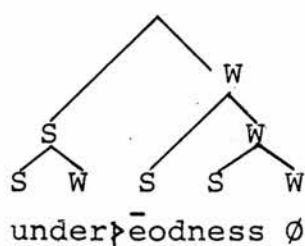


As we have seen, the presence of a prefix does not affect the simplicity of the derivation - each of the formatives is simply 'slotted' together by the Word Rule. Thus:

(2.67) underþēodness 'submission'

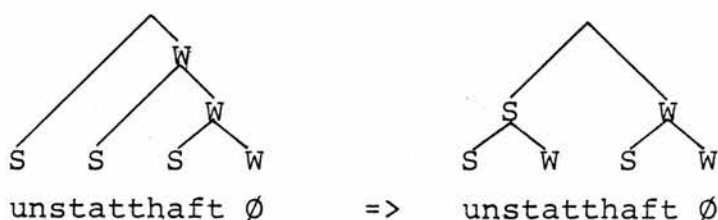
[[under]Z]_{N,A} [þēod] [X[ness]]_N





The distinctive characteristic of the derivations produced by this analysis is the large number of terminal S nodes followed (in the majority of the examples we have looked at so far) by a W node dominating a zero syllable. Such a structure may seem highly unmotivated in the light of what we know about rhythmic alternation between stressed and unstressed syllables within the stress timing of languages like ModE and Mod. German. The defooting rule which Giegerich (1985) proposes for German is applicable primarily in compound formation and is not immediately relevant to the present discussion. He does, however, have some examples of structures which are identical to the ones we are considering in OE, i.e., forms with either two stressed prefixes or a stressed prefix and a stressed suffix. Consider the following example:

(2.68)



(Giegerich 1985: 205)

Structures such as these are also subject to Giegerich's defooting rule which has the effect of producing the correct rhythmic alternation found in speech. While the

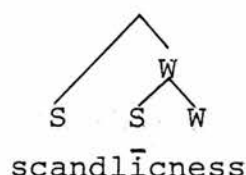
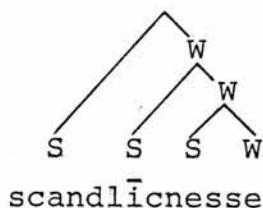
stress rules produce an underlying metrical structure in which the prominence of the third syllable is subordinate to that of the second, the defooting rule reverses this pattern and the secondary stress falls on the third syllable of the word.

The problem we face with the OE data is that, in spite of the fact that OE is a stress-timed language and we might therefore expect this kind of alternation, there is no direct evidence of it. In fact, if anything, the metre leads us to suspect a different kind of defooting rule. In an earlier part of this Chapter, it was pointed out that suffixes may fill a secondary rise position in the metre only if they are followed by another (unstressed) syllable. So while the -ing of æþelinges may fill a rise, that of æþeling may not. This suggests a defooting rule which removes the prominence of the last of a string of at least two S nodes which is followed by a zero syllable. In other words we would want surface forms which contrasted in the following way:

(2.69) a.



b.





Such an OE defooting rule might be formulated as:

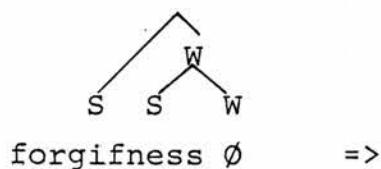
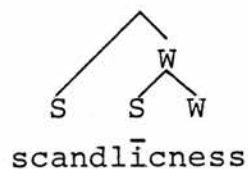
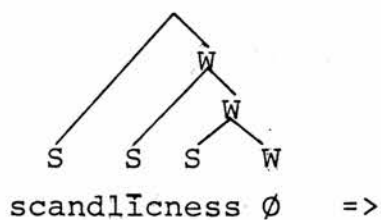
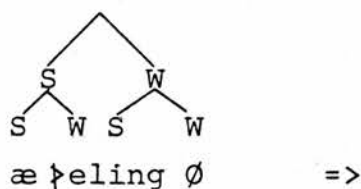
(2.70) OE Defooting Rule

$$\begin{array}{cccccc} (S & W) & S & (W) & S & W \\ & & & & & \downarrow \\ & & & & & \emptyset \\ 1 & 2 & 3 & 4 & 5 & 6 \end{array} \Rightarrow \begin{array}{cccccc} (S & W) & S & (W) & W \\ 1 & 2 & 3 & 4 & 5 \end{array}$$

Consider how the surface forms in (2.69 b) and (2.71 b) would be derived by means of the OE Defooting Rule, from the underlying structures (2.71 a) produced by our stress rules:

(2.71) a.

b.



I emphasise again, however, that there is no empirical evidence for introducing such a rule into our OE grammar. We are simply making assumptions on the basis of a) our knowledge of modern stress-timed languages, and in particular German, which is remarkably similar to OE in its prosodic structure of the native part of the vocabulary. But even so, how justified are we in saying that OE and ModE are exactly the same in this respect since we have seen them to be typologically different in other areas relating to stress? and b) the accentuation patterns found in the metre which, as we have already argued, may be put down to the rules and conventions of OE metrics. The OE Defooting Rule is just a suggestion therefore which will require further inquiry. I do not propose to adopt it into the present analysis as, being a surface adjustment, it would not affect the claims made in the final Chapter of this thesis.

Let us turn now to one final point on the stressing of derivational suffixes. Campbell's list of environments which qualify for secondary stress include the present participle -ende, the inflected infinitive -enne, the superlative -est, -ost, and the medial formative elements -i- and -od- of Class II weak verbs. I think that all of these could be interpreted as derivational affixes, in which case they would automatically be assigned prominence by the Stress Rule. The presence of some degree of stress on these suffixes is indicated by their occurrence in the metre in secondary rises - most of the half-lines containing words with such forms would be unmetrical unless they were scanned as / \ x . Consider

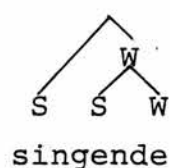
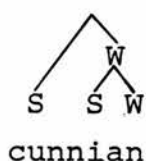
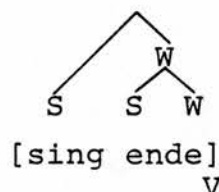
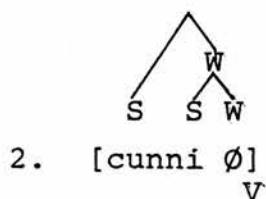
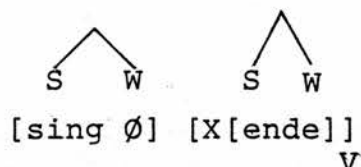
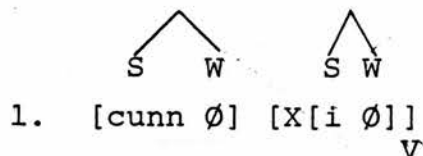
- | | | |
|-----------|------------------|------------|
| (2.72) a. | súnd cúnniān | Beo. 1426b |
| b. | góld glítiniān | Beo. 2758a |
| c. | Býrtnōþ maþelode | Maldon 42a |
| d. | Sōna inwlatode | Beo. 2226b |

The derivations in (2.73) show how the rules we already have will produce the correct structures:

(2.73) a. cunnian 'to investigate' b. singende 'singing'

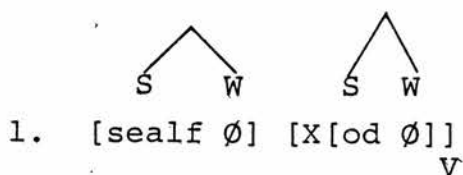
[cunn] [X[i]]
V

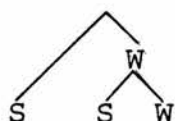
[sing] [X[ende]]
V



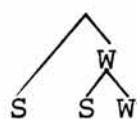
c. sealfode 'to anoint' (past sg.)

[sealf] [X[od]]
V





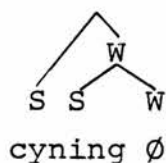
2. [sealf od Ø]



sealfode

So far nothing has been said about inflectional endings, specifically how and at what point they are attached to the derived stem. Notice that in all the examples we have considered, the inflection has been affixed after all the derivational morphology has been completed. Furthermore, it has been implicit in those structures that inflections simply slot into a zero syllable. Thus we get

(2.74) a.



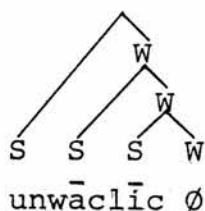
cyning Ø

-->



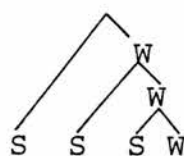
cyninges

b.



unwāclīc Ø

-->



unwāclīce

c.



d.



This, however, is not always the case. Recall the words with bisyllabic roots such as werod, wæter, hamor which

will be assigned an S W tree by the stress rule and will not have a zero syllable as the weak sister. Clearly then, the generalisation that can be made about the behaviour of inflectional endings is that they are assigned a W node. As all zero syllables are dominated by W, an inflection will fill this node since it will be prevented from attaching to the existing structure as another W node by the form of the Metrical Foot template (given in (1.16)). Once all the morphology has been completed therefore, we will have metrical structures like those in (2.74) and (2.75). The example in (2.75 c) is a case which would be disallowed by the foot template.

(2.75) a.



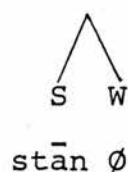
b.



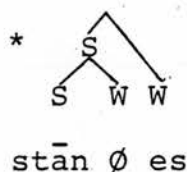
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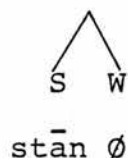
c.



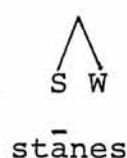
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d.



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But to say that all derivational morphology precedes the addition of inflections would be to leave certain forms unaccounted for. Consider, for example, rēcelēas 'reckless', rȳnelīc 'mystical', sigelēas 'not victorious'. The syllable before the prefix would appear in each case, to comprise an inflection. On closer inspection we find that the roots of each of these, rēc-, rȳn-, sig- may combine with affixes to form either nouns or verbs which are not semantically related. So we find rēc n. 'smoke' but rēcān v. 'to be anxious'; rȳne n. 'mystery' but rȳnan v. 'to roar'; sige n. 'victory' but sig v. 3 sg. pres. subj. of wesan 'to be'. What seems to be happening is that the derived forms are either deverbal or denominal depending on their meaning and the presence of the 'inflection' perhaps serves to indicate which. For example, sigelēas is clearly from sige n. since the verb would have no inflection in this 3 sg. pres. subj. form. All this, of course, is highly conjectural, but perhaps serves

to indicate that one must allow for affixes to be added to base forms as well as to roots and that therefore the ordering of the derivational and inflectional morphology cannot be so categorically stated.

Alternatively, such forms may be treated as containing a 'derivational augment', in which case they would be listed alongside the other derivational affixes. This option will be discussed in Section 2.2.4 together with a similar phenomenon found in compound forms.

2.2.3 Compound stress

We have already seen (Section 2.2.1.1) that an SPE-type approach to compound stress such as that proposed for OE by Halle and Keyser, involves the application of a Compound Stress Rule together with a Stress Lowering Convention. This results in OE compounds surfacing with a primary stress on the first element and a secondary stress on the second.

- (2.76) wældrēor 'blood of slaughter'
fyrgen-strēam 'mountain stream'
gámol-feàx 'grey-haired'
þrí hýrned 'three-cornered'
góld-māð ma 'treasure of gold'
gúm-dreám 'joy of men'
dryht-gúma 'noble's man, retainer'
léod-cýning 'king of a people'

These stress patterns are again based on the evidence provided by the metre where we find the first stressed syllable in a primary rise and the second (generally) in a secondary rise:

- (2.77) a. gold-māð mas hēold Beo. 2414b
 b. gum-dream ofgeaf Beo. 2469a
 c. druncne dryht-guman Beo. 1213a
 d. leof leod-cýning Beo. 54a

There are some examples in the metre where the stressed syllable of each element may fill a full rise position:

- (2.78) a. fæderen-mæge Beo. 1263a
 b. se þe wæter-egesā Beo. 1260a
 c. to ecg-banan Beo. 1262a

This may be taken as an indication of the strength of the stress on the second element - strong enough to allow it to function as a primary accent in the metre. Noticably, this use of a secondary stress to fill a primary rise position is only observable with primary compounds and not lexicalised ones (the difference between these two categories will be outlined shortly).

The place in the grammar at which word-formation takes place is by no means an uncontroversial matter. Although Marchand's (1969) work could not be termed 'transformational' in character, he differentiated between the derivational morphology (i.e., formations via affix) and compounding which he claimed took place within a syntactic domain. The generative transformationalists like Lees (1963), Chomsky (1965) and Lakoff (1965), however, moved all aspects of word-formation into the syntactic component to be derived by means of transformational rules (although any phonetic alternations thus produced were dealt with in the phonology - cf. SPE). As a result of this, the function of the lexicon within the grammar was restricted to simply listing lexemes together with any information which cannot be predicted by general rule, e.g.,

declensional class, unusual syntactic behaviour and semantic specifications. This approach has been challenged under the 'lexicalist' hypothesis, initially by Chomsky (1970) with respect to nominalisations, and later by Siegel (1974), Jackendoff (1975), Aronoff (1976), Allen (1980), Strauss (1979) and Kiparsky (1982). The lexicalist position is that all derivatives and compounds are listed separately in the lexicon, i.e., treated as if they were simplexes or lexicalised forms (Chomsky 1970); or else they may be derived by means of word-formation rules within the lexical component (Siegel 1974, Strauss 1979, etc.). Various arguments have been put forward in favour of this hypothesis based, amongst other things, on stress behaviour and certain evidence for the status of compounds as morphological rather than syntactic entities¹⁴.

Having adopted in the earlier part of this Chapter a lexicalist approach to both stress assignment and derivation via affix, I intend to continue within this framework when dealing with compounds. I do not offer any further justification - the reader is referred to the works already cited and to Hoekstra et al (1981) for an overview.

In addition to their always comprising at least two potential roots, compounds (in ModE at least) have been observed to have the following characteristics as well (Allen 1980):

- a) Inflectional affixes do not appear inside compounds, just as they are not found in prefix or suffix derived words¹⁵

e.g., mouse-traps not *mice-traps
hand-towels not *hands-towels

- b) Some derivational processes may apply after

compounding, e.g., left-handedness,
heart-rendingly.

- c) Elements of compounds cannot function separately with respect to syntactic processes, e.g., *I don't want a bread-basket, I want an egg one.

Furthermore, and this is particularly important for OE as well, Allen distinguishes between what she calls primary compounds and lexicalised compounds. Essentially, what we find is a compound form developing over time into a 'lexicalised' or morphological simplex. This process of lexicalisation constitutes one of the central arguments for treating compounds as morphological entities. Allen distinguishes between these compound categories by means of two conditions. Primary compounds meet both her Variable R Condition and her Is A Condition and are thus regarded as semantically transparent. The first of these refers to the variability of the possible meaning of a primary compound, for example, fire-man may mean 'man who worships/walks on/sets/guards fire(s)' as well as its conventional meaning. So although primary compounds tend to adopt a 'fixed' meaning, as a linguistic unit they may have a range of possible meanings which Allen specifies in terms of semantic feature sets of the constituent elements. Her Is A Condition is formulated as:

(2.79) Is A Condition

In the compound $\begin{matrix} [[...] & [...]] \\ & \text{X} \quad \text{Y Z} \end{matrix}$,
Z "IS A" Y.

(Allen 1980: 11)

This condition may be interpreted both syntactically (where it predicts the derived category of a compound) and semantically. In the latter case, it shows the semantic sub-set relation that holds between the compound Z and

the constituent Y e.g., a steam-boat IS A boat. Allen predicts that primary compounds meet both these conditions. Those compounds which fail either the Variable R Condition (e.g., huckleberry) or the IS A Condition (e.g., buttercup)¹⁶ are said to be lexicalised compounds.

Having established the difference between the two types of compound, Allen goes on to propose a Primary Compound Formation Rule (PCFR) which produces these compounds with an internal double word boundary - a characteristic of all transparent compounds.

(2.80) PCFR

$$\begin{array}{ccc} [\#X\#] & \dots\dots\dots & [\#Y\#] \text{ --> } [[\#X\#][\#Y\#]] \\ N,A(V) & & N \end{array}$$

Condition: Y contains no V

(Allen 1980: 14)

This strong boundary (i.e., ##) blocks the application of morphological rules and prevents semantic distortion taking place.

While primary compounds are in principle semantically predictable from the meanings of their elements, the meaning of lexicalised compounds has diverged from literal interpretation to such an extent that they must be listed in the lexicon. Allen notes that phonological variation within the elements of compounds corresponds with the degree of semantic transparency. For example, one only finds vowel reduction in the second member of lexicalised compounds. Compare the following:

- (2.81) a. mainland [-lənd] b. bear-land [-læ nd]
 highland [-lənd] waste-land [-læ nd]

chairman [-mən]bird-man [mæ n]Newtown [-tən]hill-town [tawn]

Marchand (1969) accounts for this phenomena in diachronic terms: "the pronunciation [of compounds in -man] is mən in all older words" while "the pronunciation mæ n is found in all recent words of a more or less occasional nature". As noted above, Allen handles this in a synchronic grammar by proposing that semantically transparent compounds are produced via the PCFR so that the phonological shape of the elements remain the same under compounding as when they are free-standing words. In lexicalised compounds, the second element is characteristically stressless (as evidenced by the presence of schwa) in the same way as Siegel's (1974) Class II suffixes like -ness, -ful, -less, etc. Allen claims that the second elements of lexicalised compounds are similarly treated as suffixes - ones which have some of the semantic characteristics of the free lexical item.

As the difference between primary and lexicalised compounds is thus accounted for in terms of the presence or absence of an internal strong boundary, Allen has to posit two types of word boundary:

- a) one which is an integral part of the prefix or suffix, e.g., [#ful] [un#]; and

SUF PRE
- b) one which designates the domain of the phonological word and is assigned by convention to the external bracketings of sequences which qualify as words, e.g.,

- (2.82) a. [# [WORD] [#SUFF] #] [# [mercy] [#ful] #]
 b. [# [#WORD#] [#WORD#] #] [# [#mercy#] [#killing#] #]

In order to produce these different boundaries within the derivation, however, Allen is forced to propose that external word boundary assignment takes place after prefixation and suffixation, but before compounding. She can then formalise the observation that "boundary differences account for the co-occurrence of semantic transparency with phonological stability, semantic distortion with phonological instability" (p. 25) in the Strong Boundary Condition (2.83):

(2.83) Strong Boundary Condition

In the morphological structure

X B_s Y

No rule may involve X and Y where B_s,
the strong boundary,
is ## and where rule
refers to both 'semantic
amalgamation process'
(as defined) and
'phonological rule'.

In OE, we find not only primary compounds (see examples in (2.76) which I have argued retain secondary stress on the second element, but also lexicalised compounds which reflect the characteristics of semantic and phonological distortion described by Allen.

(2.84)	<u>wī</u> sdōm	'wisdom'	<	<u>wī</u> s	'wise'	<u>dō</u> m	'judgment'
	<u>hlā</u> ford	'lord'	<	<u>hlā</u> f	'loaf'	<u>weard</u>	'guardian'
	<u>fult</u> um	'help'	<	<u>full</u>	'full'	<u>tē</u> am	'team'
	<u>lā</u> reow	'teacher'	<	<u>lār</u>	'learning'	<u>þē</u> ow	'servant'
	<u>ful</u> wiht	'baptism'	<	<u>full</u>	'full'	<u>wiht</u>	'consecration'

Each of these forms shows some degree of phonological reduction, whether it be vowel shortening or consonant loss.

While this type of reduction is only found in lexicalised compounds, it is not a necessary condition for lexicalisation. Semantic obscuration is the main determiner of such compounds (Luick 1921, Giegerich 1985), e.g.:

- (2.85) godcund 'divine' < god 'God' cund 'a kind'
eorlscip 'earldom' < eorl 'earl' scip 'ship'
manigfeald 'mani-
 fold' < manig 'many' feald 'field'

In adopting a lexicalist analysis for compounds as I have done for affix-derived word-formation processes, I will take up Allen's proposal of a word plus word derivation for primary compounds as opposed to a word plus suffix account of lexicalised compounds (see also Giegerich 1985). I intend to show that through the appropriate rule ordering within the lexicon, one can avoid making reference to two types of word boundary which are assigned at different stages in the derivation (cf. Strauss 1979, Kiparsky 1982).

Let us look first at lexicalised compounds. It has been pointed out that the second elements in these constructions have some degree of stress and as such behave in exactly the same way as OE suffixes. Such items may therefore be derived through the same word-formation processes as suffixation. Consider the derivation of wisdōm:

- (2.86) wisdōm 'wisdom'

[wīs] [X[dōm]]
 N

1.
 [wīs ∅] [X[dōm ∅]]
 N
- The diagram shows two separate morphological trees. The first tree has a root node branching into 'S' and 'W', with 'S' dominating [wīs] and 'W' dominating ∅. The second tree has a root node branching into 'S' and 'W', with 'S' dominating [X[dōm]] and 'W' dominating ∅.

2.
 [wīs dōm ∅]
 N
- The diagram shows a single morphological tree with a root node branching into 'S' and 'W'. The 'S' node branches into 'S' and 'W', with the left 'S' dominating [wīs] and the right 'W' dominating [dōm]. The right 'W' node dominates ∅.

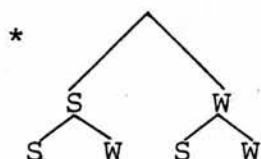
word-formation processes have been completed, but before the inflectional rules have applied (recall Allen's point a)). As the stress contour of all OE primary compounds is invariable, the Compound Stress Rule may be formulated quite simply as:

(2.87) OE Compound Stress Rule (i)

In a configuration $\begin{matrix} [[A] & [B]] \\ & x \quad y \end{matrix}$,

where x and y are lexical categories,
A is strong.

x and y would have to be specified in order to prevent this rule applying to affixed forms like $[[\text{and}][\text{giet}]]$ for example and thereby producing ill-formed structures like



$[\text{and } \emptyset \text{ giet } \emptyset]$ (notice that this rule does not get rid of internal zero syllables).

However, if we maintain the principle of level ordering which has been adopted for the analysis so far, the Compound Stress Rule would be operative at level 3 after the Word Rule has applied at level 2. As a result of this, andgiet would get handled by the Word Rule before it reaches the domain of the Compound Stress Rule. So all items, by the time they reach level 3 in the derivation process, will be complete lexemes with appropriate metrical structures already erected. What in effect the Compound Stress Rule does is to take two such items and, without altering their existing prominence structures, 'join' them together. The clause "where x and y are lexical categories" may thus be left out of

the formulation of the rule which may now be expressed as:

(2.88) OE Compound Stress Rule (ii)

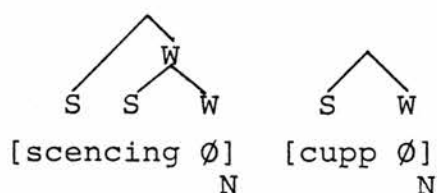
In a configuration $[[A][B]]$,
A is strong.

Evidence for having compounding take place at level 3 after the derivational processes of affixation, comes from the existence of compounds with suffixed first elements and/or prefixed second elements.

(2.89) <u>scencingcuppe</u>	'cup from which drink is poured'
<u>hringedstefna</u>	'ring-prowed ship'
<u>fæstedhlēar</u>	'with gold-plated headgear'
<u>brogden-mæ l</u>	'sword with wavy patterning'
<u>mīlgemearc</u>	'measure by miles'
<u>scancgegirelan</u>	'leg clothing'
<u>swyrdgeswing</u>	'sword-stroke'

In the case of scencingcuppe for example, suffixation of -ing to the first element must precede the compounding with cuppe (unless of course we propose some complex suffix-insertion rule). After any necessary affixation processes have been completed, each element (a semantic entity in its own right) would surface with a word tree:

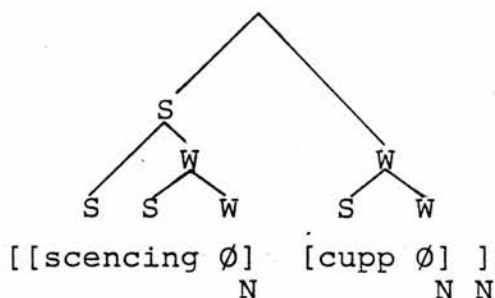
(2.90)



The compounding operation takes place next and the OE

Compound Stress Rule applies to produce:

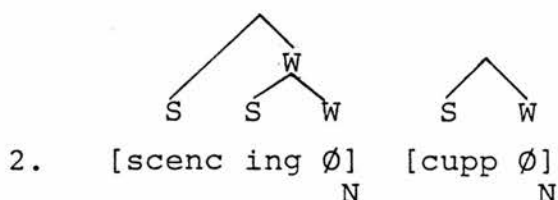
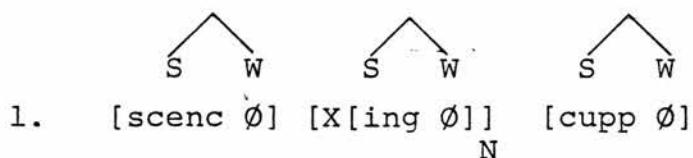
(2.91)

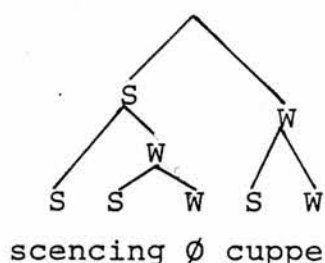
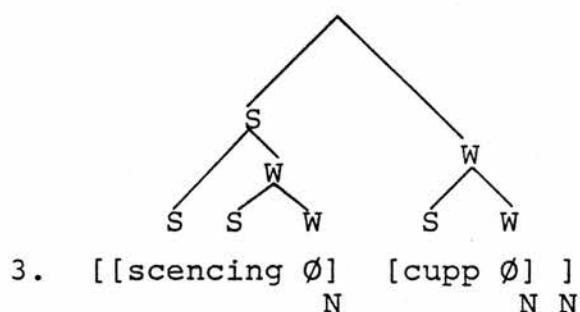


The effect of the compound rule is to join two fully-formed lexical items, each with its own DTE, so as to express the prominence relations which hold between them. The point that each element in a primary compound has a DTE is an important one, as it is the presence of this DTE (indicating the position of the primary stress of the simplex) which characterises a word as an independent semantic entity. For this reason, the metrical structure of the second element may not be embedded into that of the first, thus leaving the zero syllable unfilled. The complete derivation of scencingcuppe would be as follows:

(2.92) scencingcuppe 'pouring cup'

[scenc] [X[ing]] [cupp]
N





Because the Compound Stress Rule and the Word Rule both assign a left-strong tree over existing metrical structure, the latter would be able to erect the correct metrical structure on certain primary compounds (like gamolfeax, fyrgenstream, ðegenboren), because in each case the first element is a bisyllabic simplex and as such will not be followed by a zero syllable. Superficially, the resulting structure would be the same as that for æþeling, for example. Compare the derivations in (2.93):

(2.93) a. gamolfeax 'grey-haired'

[gamol] [feax]



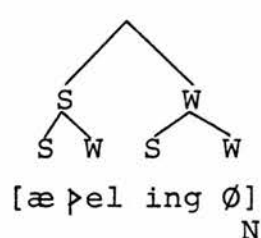
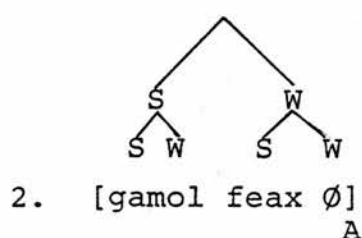
1. [gamol] [feax Ø]

b. æþeling 'nobleman'

[æþel] [X[ing]]
N



[æþel] [X[ing Ø]]
N



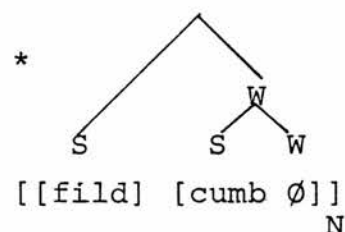
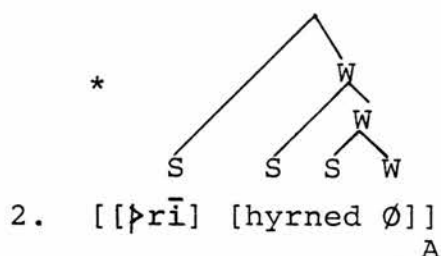
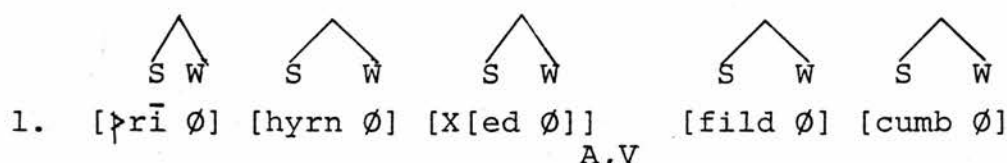
When, however, the first element of a compound is monosyllabic, the Word Rule would produce ill-formed outputs by doing what it was formulated to do, i.e., embedding feet which are preceded by zero syllables. While this is a necessary operation within the domain of a single word, e.g., ætspyrning, wīsdōm, etc., it clearly produces undesirable results when applied to compounds like þrīhyrned and fildcumb:

(2.94) þrīhyrned 'three-cornered'

fildcumb 'milk-pail'

[þrī] [hyrm] [X[ed]]
A,V

[fild] [cumb]

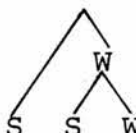


Such a treatment would amount to nothing more than a

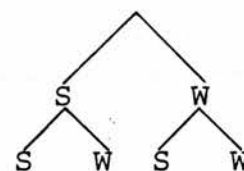
suffixation process and as such would not be able to show up the structural differences which reflect the morphological non-identity of lexicalised and primary compounds. Arguably, this is already indicated by the morphological bracketing and labelling, but if primary compounds were to be assigned a single-node dominated metrical structure, one would expect the same type of phonological obscuration to take place as does in lexicalised forms. The absence of embedding serves to emphasise that the elements making up a primary compound are separate prosodic, as well as separate morphological, entities. It is admittedly difficult to find empirical evidence for this (especially in OE), except perhaps from semantics, particularly as phonological obscuration is not a necessary condition for lexicalisation. We may therefore wish to speak of lexicalised items as lacking semantic compositionality (Aronoff 1976) i.e., the meaning of the whole is not predictable from the meaning of the individual parts. This in turn may be taken to signify the absence of a strong word boundary, characteristic of lexical constituents (cf. Allen's Strong Boundary Condition).

On the prosodic level, one may argue for the distinctness of the elements of a primary compound on the grounds of their treatment by the metrical accentuation rule. The reader will recall that while the secondary stress on a suffix may be ignored by the metre, the stress on the second element of a primary compound may not, and in fact may even be represented in a primary rise position. It was suggested in the above discussion, that such behaviour might indicate a higher degree of linguistic stress on the second elements of compounds than that found on non-compound forms. This difference, together with the fact that there exists a strong boundary between the two elements, is captured by our notation in the fact that the metrical structure of each may not be altered in any way by the compounding process.

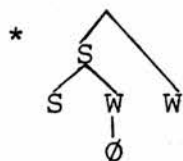
This means, of course, that the Defooting Rule (2.70) should not apply to compound forms. Of the structures



which undergo defooting, $\text{S} \text{ S} \text{ W}$ is the most common. Strikingly, they are not found dominating primary compounds.



Structures with internal zero syllables, e.g., fild ∅ cumb ∅ would fit the domain of the rule, but are prevented from defooting by our Metrical Foot Template which specifies



Ø as ill-formed. The only problematic cases for the Defooting Rule as it stands, are examples like gamolfeax which have metrical structure identical to that of, for example, æþeling (cf. (2.93)), which is subject to defooting.

I see two possible ways of handling this. Recall that I suggested in Section 2.2.2.2 that defooting be a surface adjustment. If we maintain this view, the Rule would have to be reformulated with a condition stipulating that no internal labelled brackets should be present in the domain of the Rule. Lexemes would therefore leave the lexicon together with their syntactic bracketing, thereby allowing the Defooting Rule to differentiate between

$$\begin{array}{c} [[\text{gamol}][\text{feax } \emptyset]] \\ \quad \quad \quad \text{A} \quad \quad \quad \text{N A} \end{array}$$

and

$$[\text{æ} \text{þeling } \emptyset].$$

Alternatively, one could allow defooting

to take place at level 2, directly after the word structure has been built, but before compounding. This solution is less acceptable since defooting is a connected speech phenomenon and therefore unlikely in the underlying forms of words in isolation.

This discussion stemmed initially from observations of the differences between compounds and non-compound forms. It was pointed out that the Word Rule as it stands, cannot be used to assign prominence relations in primary compounds. The Compound Stress Rule, unlike the Word Rule, does not make any adjustments to the existing metrical structure and is therefore not collapsable with this latter rule.

This blindness of the Compound Rule to any structure below its own prosodic level has been observed in ModE as well and a solution proposed by LP. As mentioned in the introductory Chapter, they suggest that a node M (mot) be automatically assigned to the top of every word tree to prevent their Lexical Category Prominence Rule (LCPR), which assigns both word and compound stress, from being sensitive to any branching not "on the same prosodic level". Giegerich (1985) argues that M is a phonological prime only in a "narrow" sense in that the criteria we appeal to in assigning M are semantic rather than phonological in nature: "In metrical terms, a lexical item is treated as a two-M compound only if the semantic relations that hold between its constituents are transparent. If they are in any way obscured, the item in question is dominated by a single M and has the metrical properties of a non-compound word." (Giegerich 1985: 10). It is argued that in this way one is able to give a principled account of the different structural and semantic properties of primary and lexicalised compounds.

One might be tempted simply to adopt this proposal into our analysis of OE were it not for a number of points. Firstly, notice that M is essentially a blocking device introduced to restrict the domain surveyed by the LCPR. Since none of the OE prominence assigning rules are sensitive to tree branching, we have no need of such a device. Secondly, as already pointed out, semantic integrity of the compound constituents is indicated by their morphological bracketing and need not therefore be additionally specified. Thirdly, because our rules are level-ordered, even if they were sensitive to branching, M would still be unnecessary through the adoption of Mohanan's (1982) Opacity Principle which makes the structure assigned at one level invisible at another.

Notice that our OE Word Rule and the Compound Stress Rule in fact perform the same function: they assign the greatest prominence to the left-most syllable capable of bearing stress. As such, they ought then to be collapsable, which they may be if the wording of the rules is appropriately adjusted. The only thing that stops us from doing this is the ordered application of the two rules, and the absence of embedding in primary compounds. As I argued above, the domain of the Compound Stress Rule must be restricted to level 3 which predicts the prior operation of derivation processes via affix.

Mohanan (1982) argues for the possibility of the stratal diversity of a single rule. This could be done in our OE analysis by adding a condition to the Word Rule stipulating that L (cf. (2.44)) contain no internal labelled brackets. We could then extend the domain of the rule to include both levels 2 and 3, and thereby enable the one rule to assign prominence (like the LCPR) to all lexical items. Alternatively, we could divide the two parts of the Word Rule into two separate rules, the first of which would be

operative at levels 2 and 3. The application of the second (i.e., the deletion of morpheme-internal zero syllables) would be confined to level 2 and the two rules extrinsically ordered at this level.

Of these options, the former is perhaps preferable, but I do not intend to incorporate it into the present proposal as it does not affect the predictions the analysis makes, or the ordering of the various word-formation processes. In fact, all it would involve would be the dropping of the Compound Stress Rule, the above mentioned amendment to the Word Rule, and perhaps a re-naming of this rule.

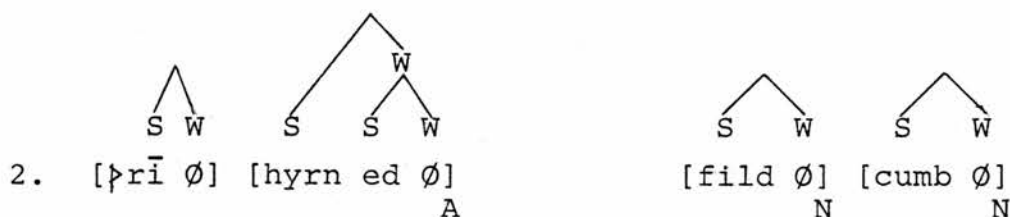
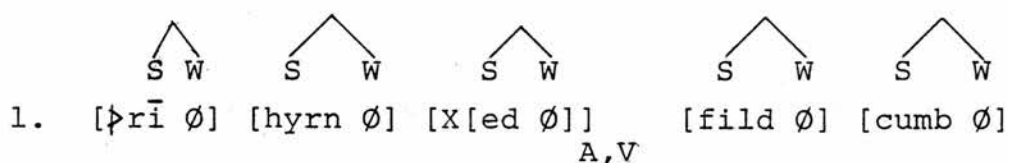
Whichever way we formalise the Stress Rules, the domain of compounding, and therefore compound stress assignment, remains level 3, after the derivational morphology of level 2. In (2.95) below I give the well-formed analysis of the compounds treated in (2.94) - compare the different structure of the lexicalised compound fulwiht 'baptism' in (2.95 c).

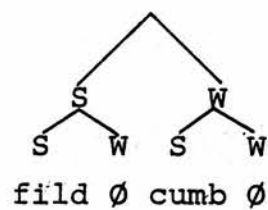
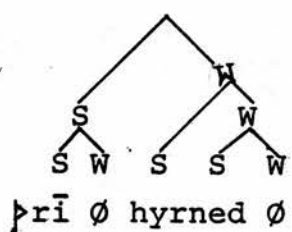
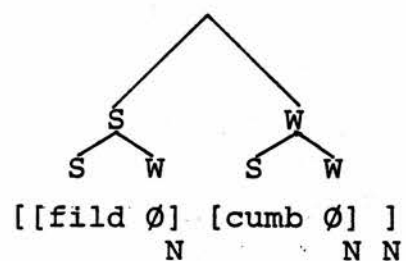
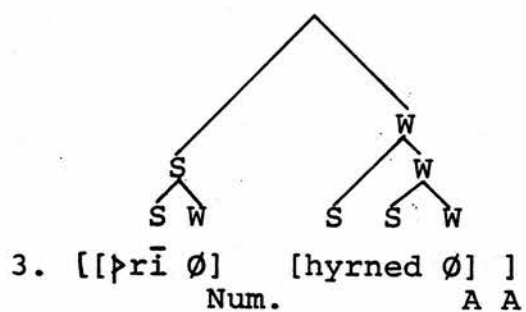
(2.95) a. prihyrned

[p̥ri̯] [hyrn] [X[ed]]
A,V

b. fildcumb

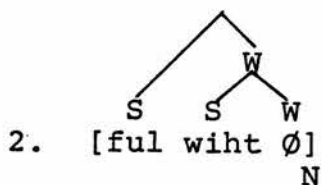
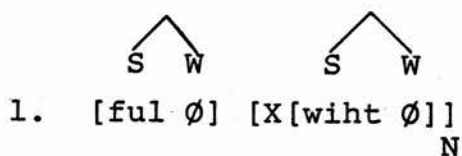
[fild] [cumb]



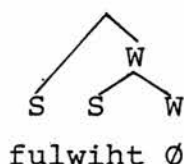


c. fulwiht 'baptism'

[ful] [X[wiht]]
 N



3. ———

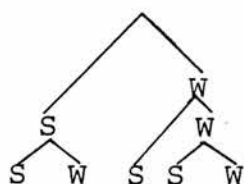


Notice that one of the advantages of not having to use labels like Prefix, Suffix, etc., in our initial entries in the lexicon is that suffixes and the second elements of lexicalised compounds can be characterised as having the same morphological structure (i.e., [X[___]]) without having to commit ourselves to saying that the latter have in fact become suffixes.

Another point that should be noted in connection with the accentual prominence accorded primary compounds within OE metre is that, as predicted by our analysis of the linguistic stress contours, the subordinate stresses on suffixes etc. are retained when an item containing such an affix is subject to compounding. Consider, for example, the following compounds which constitute a complete half-line by themselves:

- (2.96) a. fyl-wērigne Beo. 962b
 b. mæg-en-býr enne Beo. 3091b
 c. fela-mōdigra Beo. 1888b
 d. Sige-scyldingum Beo. 2004a

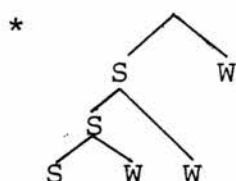
I feel that the prominence relations which would be assigned to these forms under the analysis proposed here



(for e.g., fyl Ø wērigne) adequately reflects these

observations.

One qualification must be made to the claim that compound-internal zero syllable always remain intact. There are examples of OE primary compounds, the second elements of which have an initial unstressed prefix following a monosyllabic first element, e.g., swyrdgeswing 'sword-stroke', ƿeodgestreon 'people's treasure', wundorbeboð 'strange command'. These prefixes are not assigned any metrical structure by the Stress Rule for the reasons we have already discussed, and cannot therefore be incorporated into any word tree. I suggested at the time that these unstressed prefixes be treated as enclitics and simply get drawn into the preceding foot as a weak sister. I propose to adopt a similar analysis in the case of compounded items. Although I can find no direct empirical support for such an approach, I think that it is both instinctively and theoretically preferable to having a prosodic representation in which a zero syllable is followed by a 'floating' prominenceless syllable. The only other option is a structure like




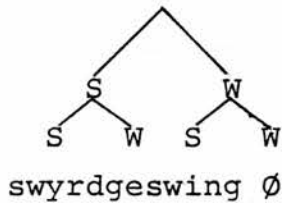
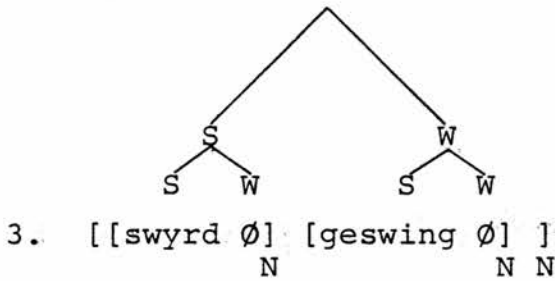
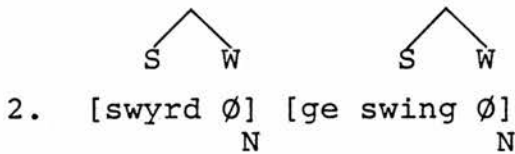
swyrd Ø ge- — which is ruled out by our Foot Template.

My analysis of swyrdgeswing would therefore look like this:

(2.97) swyrdgeswing 'sword-stroke'

[swyrd] [[ge]Z] [swing]
N,A,V,Av

1. 
[swyrd Ø] [[ge]Z] [swing Ø]
N,A,V,Av



Where the first constituent is bisyllabic, the unstressed prefix will simply attach as another W node. Notice that this analysis does not, as does defooting, actually involve any alteration of the metrical trees already built. An existing node is simply filled in accordance with the well-formedness demands of the Metrical Foot Template.

2.2.4 Inflectional affixes

So far, I have refrained from a detailed discussion of inflectional affixes and have simply implied that they attach to stems after the derivational processes have been completed, i.e., after level 2. Turning now to compounds we generally find that the inflection occurs at the end of the second element and as such qualifies the compound as a whole. For example

(2.98)	<u>gold-māðmas</u>	'treasures of gold'
	<u>hēah-cyninges</u>	'great king's'
	<u>gūð-geweorca</u>	'deed of war'

<u>hēafod</u> -beorge	'head-protection'
<u>horn-bogan</u>	'horn-shaped bows'

To accommodate this observation we could specify that our rules of inflectional morphology apply at the end of the word-formation component, i.e., after level 3. The situation is not as simple as this, however, as there exist numerous compounds with inflected first elements (rather contrary to the situation Allen describes for ModE).

(2.99) <u>hādesmann</u>	'member of a particular order'
<u>cildamæ ssedæg</u>	'children's mass day'
<u>cuðemen</u>	'kinsfolk'
<u>searocreaft</u>	'artifice'
<u>bryne-lēoma</u>	'gleam of fire'

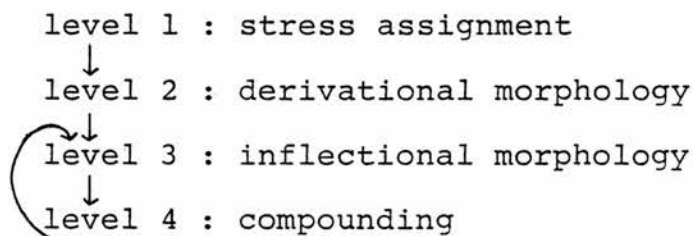
This would seem to argue for two stages of inflection, the first at the end of level 2 and the second after compounding at level 3. So in a compound like hilde-wæpnūm 'war weapons', hild would be inflected after the application of the Word Rule, while -um is added once the compound has been formed. Note that in all cases, as described earlier, the inflectional syllable constitutes a W node.

Kiparsky (1982) argues that inflectional morphology provides further justification for the level ordering approach in ModE. He points out that inflections which occur inside compounds are certain predictable types (e.g., irregular plurals - oxen, and pluralia tantum - people, odds). While such forms are produced at level 1, all regular inflectional morphology takes place at level 3 at the end of the stress assignment and word-formation processes. No such generalisation can be made for OE, however. The inflected first elements of OE compounds may have any case ending (although

the most common are nom. and gen.), always follow their declensional class and may be singular or plural. Consider again the examples in (2.99): hades masc. gen. sg., cilda neut. gen. pl., cuðe nom. pl. adj., bryne masc. nom. sg. Because of the diversity of the type of ending found inside compounds, I think that they must be treated as inflections rather than as derivational augments.

In order to account for the OE data, I suggest we adopt a device proposed by Mohanan (1982) called the 'loop'. He introduces this to deal (amongst other things) with a similar problem in ModE where compounding may sometimes precede Class II derivation e.g., unself-sufficient, ex-frogman. The loop in effect allows the outputs of two levels to be the input to one another. This may be characterised for level ordering in OE as follows:

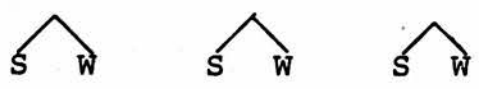
(2.100) Level ordering in OE

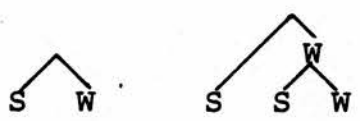



That is to say that although level 3 or level 4 can be inputs to one another, the affixation of inflections at level 3, precedes compounding. As a result, inflected lexical items are present at the point where compounding takes place, but once this has been completed, the compound output of level 4 may be 're-inflected'. (2.101) below shows the derivation of heoro-drēorigne 'bloody from a sword' with this new ordering of levels in the lexicon.

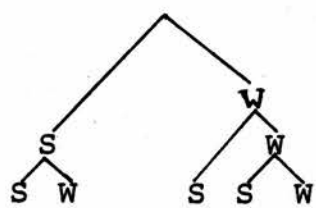
(2.101) heoro-drēorigne 'bloody from a sword'

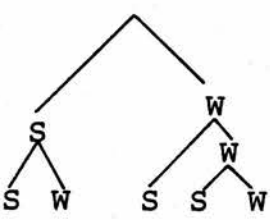
[heor] [drēor] [X[ig]]
N,A

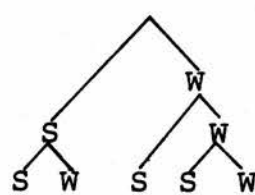
1.  [heor \emptyset] [dr̄eor \emptyset] [X[ig \emptyset]
N,A

2.  [heor \emptyset] [dr̄eor ig \emptyset]
N A

3.  [heoro]
N

4.  [[heoro] [dr̄eorig \emptyset]]
N A A

3.  [heoro dr̄eorigne]
A


heorodr̄eorigne

It must be said, however, that such an ordering of levels would over-generalise since inflected first elements of compounds, although fairly frequently found, are nonetheless in the minority. This is also true of the forms like rynelīc discussed in Section 2.2.2.2 - perhaps more so, since very few inflectional types appear therein. I think these latter examples may be taken as having some kind of derivational augment attached at level 2, rather than an internal inflection. Whether this option should also be adopted for the compound cases, I leave open to further inquiry.

Chapter 3

Middle English Stress

3.1.1 Halle and Keyser's account of ME stress

Traditionally, it was claimed that the Romance (Rom) loan-words which entered the English language after the Norman conquest adopted the native accentuation patterns and were stressed on the initial syllable (e.g., Sweet 1891, Brunner 1970, Learned 1922, Jordan 1974, Mosse 1952).

The borrowings (from French) are made to conform to the stress-system of the native element of the language. The strongest and most emphatic stress falls on the first syllable, unless this is a weak prefix. Occasionally then, French pretonic¹ syllables become post-tonic....

(Brunner 1970: 25)

(3.1)	Fr. <u>honour</u>	-->	ME <u>hónour</u>
	<u>batail</u>	-->	<u>bátail</u>
	<u>damosél</u>	-->	<u>dám(o)sel</u>

Halle and Keyser (1971) however, reject this view, asserting that the bulk of the Rom vocabulary borrowings retained their original stressing. Their evidence for this is to be found in lines from Chaucer which contain unprefixing words with non-initial stress. They quote examples like the following:

(3.2)	Of which vertú engéndred is the flóur	(<u>Prol.</u> 4)
	Wel koudě hé fortúnen the ascendént	(<u>Prol.</u> 417)
	That fórsight of divíně purveyáunce	(<u>TC</u> 4. 961)

On the basis of examples like these, HK propose that the grammar of ME had two productive stress rules: one of Gmc origin (which they call the Initial Stress Rule - cp. my OE Stress Rule - and which covered the native vocabulary), and a second, the Romance Stress Rule (RSR).

There were two main classes of non-native words in ME: those from Latin, and those borrowed from Old French (OFr) or Anglo-Norman (AN). HK formulate two disjunctively ordered rules, given in (3.3 a), to account for the Latin section of loans (3.3 b):

$$(3.3) \quad a. \quad V \rightarrow [1 \text{ stress}] / [X_C_0 \left[\begin{array}{c} - \text{ tense} \\ V \end{array} \right] C_0 \left[\begin{array}{c} - \text{ tense} \\ V \end{array} \right] C_0]$$

$$V \rightarrow [1 \text{ stress}] / [X_C_0 \left[\begin{array}{c} - \text{ tense} \\ V \end{array} \right] C_0]$$

b.	Satúrnes	Týdeus
	Caríbdis	Cappáneus
	Neptúnus	Zépherus

HK base their rule on the assumption that all final vowels in Medieval Latin were lax, as a result of which stress always fell either on the penultimate syllable if this was heavy, or otherwise on the antipenultimate. However, Kent (1945), Allen (1973), SPE and others note that the main difference between the stress rules of Classical Latin and ModE is that in the former, a final syllable is ignored no matter whether the vowel is tense or lax:

A long penult was accented, as in pepérci, inimícus, but if the penult was short, the antepenult received the accent, as in exístimō, confíciunt, ténebrae Disyllables were necessarily accented on the penult, as in tégō, tóga.

(Kent 1945: 66)

Perhaps then, HK's rule is meant to capture the situation in Late Latin after the establishment of the expiratory accent and the gradual shortening of all unstressed vowels (cf. Pope 1934: paragraph 222).

Loans from AN show the following stress patterns:

(3.4)	a.	governe	b.	honour	c.	Jhesús
		solémpne		degré		abbót
		Egípte		chanóun		tempést
		fortúne				
		divíne				

Due to the reduction and loss of unstressed syllables, OF words came to be stressed on the final syllable, unless this contained a vowel represented in the spelling as <e>² in which case the penult carried the stress (cf. Pope 1934). In OF, all vowels in open syllables became lengthened (Pope 1934: paragraphs 197-8, Meyer-Lübke 1920: paragraph 116) with the result that all syllables before <e> were heavy either through this lengthening rule, or by virtue of the fact that there was a consonant in the coda. For example:

(3.5)	Lat	<u>pedem</u>	-->	OFr	* <u>pēde</u>
		<u>febrem</u>	-->		* <u>fēbre</u>
		<u>terra</u>	-->		<u>terre</u>
		<u>portam</u>	-->		<u>porte</u>

This section of the data can therefore be handled by the second expansion of the Latin Stress Rule. However, honour, degree, etc. receive final stress because the final syllable contains a long vowel. HK propose a rule (3.6) to handle these cases:

(3.6) V --> [1 stress] / [X__C.]

The examples in (3.4 c) can also be handled by this rule for, although they contain short vowels in the final syllable, they still have final stress. They must therefore be marked as exceptions to the second expansion of the RSR which can now be given in full:

(3.7) Romance Stress Rule

$$V \rightarrow [1 \text{ stress}] / [X_C_0 ((C \begin{bmatrix} - & \text{tense} \\ & V \end{bmatrix} C_0) \begin{bmatrix} - & \text{tense} \\ & V \end{bmatrix} C_0)]$$

According to HK, therefore, all unmarked (or native) words undergo their ISR and SRR, while the others are marked as being subject to the RSR.

It has been observed by most grammarians that the ME poets make use of a large number of stress doublets where Gmc and Rom words are stressed in accordance with both rules, e.g.,

- | | | | |
|-------|----|-----------------|-----------------|
| (3.8) | a. | <u>félawe</u> | <u>feláwe</u> |
| | | <u>swéryng</u> | <u>swerýng</u> |
| | | <u>hóli</u> | <u>holí</u> |
| | b. | <u>service</u> | <u>sérvice</u> |
| | | <u>comfórt</u> | <u>cómfórt</u> |
| | | <u>Custánce</u> | <u>Cústance</u> |

HK account for these doublets by claiming a "shift of a given word from one lexical category to another" (p. 102) (cf. Luick 1896 who, in commenting on these stress alternants, puts them down to French speakers' pronunciation of English in terms of their own native (French) stress rules). According to HK, word stress in Chaucer's dialect was assigned by two rules, the ISR and the RSR depending on how a word was marked in the lexicon.

They claim that by the sixteenth century, however, the RSR has been generalised (cp. other grammarians' views that more and more of the borrowed vocabulary was subjected to the native ISR). This is based on the existence words in Levins' rhyming dictionary (1570) which have non-initial stress and can only be accounted for by the RSR:

(3.9) a.	memórial	b.	oriéntal	c.	divíne	d.	lamént
	oríginal		sacraméntal		debáte		stubbórn
	geométrical		accidéntal		secúre		flagón

Now observe that while (3.9 c and d) still reflect the OFr stress pattern (final or penultimate stress), borrowings from French in (3.9 a and b) clearly do not. These latter show stressings in English which must have been the result of some kind of stress shift from the final to the penult or antepenultimate syllable in accordance with the Latin part of the RSR. These new stress patterns can be produced by the RSR, but when such words were originally borrowed into ME they would have had final stress. Since, however, their final syllables were not heavy (in terms of the formulation of HK's RSR) these words would initially have had to have been marked as exceptions (like Jesus, etc.) and been subject to the third expansion of the RSR, i.e.,

V --> [1 stress] / [X__C.] .

The stress patterns in (3.9), however, would seem to suggest that by the sixteenth century, this expansion of the rule, together with the exception feature, had been dropped from the grammar and that all the vocabulary now conformed to the main (Latin) part of the RSR. In other words, the distinction between native, French and Latin loans is lost and all lexical items are treated

identically by the stress rules. How this change came about, and whether the point at which the native and French stress rules were lost and in what order, is establishable, are the subjects of this Chapter.

3.1.2 An alternative analysis and the 'countertonic principle'

I have given a fairly detailed outline of the HK analysis of ME stress because I would agree with most of their observations (although not necessarily with their formulation of them).

It is evident that in early ME we need to posit two stress rules, the first of which is designed to handle the native element of the vocabulary. We have already seen that the OE Stress Rule was purely morphologically conditioned and I argued in Chapter 2 for analysing the data within the lexicalist hypothesis such that stress is assigned to derivational morphemes before they are subject to the processes of word-formation. There is no reason to believe that this same situation did not hold at the beginning of the ME period as we find native words with their familiar OE stress contours:

(3.10)	ME <u>félaʒschyp</u>	ME <u>schémered</u>
	<u>Crýstmasse</u>	<u>lóngynge</u>
	<u>lúflych</u>	<u>bycóm</u>

(Prefixed items have a slightly different behaviour as we shall see in Section 3.1.2.3). The environment of the RSR, however, is phonologically determined and morphological considerations are of no consequence to the operation of the stress rule. Consider the following French loans which have final or penultimate stress

whether they are simple or affixed forms:

(3.11)	presé [́] nce	natú [́] re	bachelé [́] r	originá [́] l
	honó [́] ur	chapé [́] le	captivité [́]	noblésse.

We will see that the existence side by side of a morphologically determined native stress rule and the phonologically determined RSR, has very interesting consequences for the level ordering approach and that it in fact provides a rather neat account of the way in which the ModE system described by Siegel (1974) developed out of the OE one outlined in the previous Chapter.

3.1.2.1

Let us turn our attention firstly to the transition from early ME with a two-rule stress assignment to ModE with only one stress rule. I believe that a more detailed account of ME stress than that given by HK, can be provided by a closer examination of the data. I would like to suggest that there is sufficient evidence to merit positing an intermediate stage between the situation that holds at the beginning of the ME period and that which we find in the sixteenth century.

I begin by looking at Rom loans of the type given in (3.8 b) - i.e., bisyllabic forms like comfort and trisyllabic ones ending in the reduced vowel represented in OFr by <e> (e.g., service). It has already been pointed out that in the metre, these words can be stressed on either the first or the second syllable³. However, it would appear that the occurrence of such forms with initial stress is far more common than HK would have us believe. Danielsson (1948) observes that final stress in bisyllables is not infrequent, but says that from his investigations it would appear that, apart from those

words with a distinguishable prefix⁴ e.g., delay,
degree,

it is only found in rime positions, and it is significant that instances in mid-line or initial positions generally exhibit paroxytone⁵ stressing..... Still more significant is the fact that no instances of oxytone stressing of disyllabic words (apart from those mentioned....) seem to be found in ME rimeless alliterative verse.

(Danielsson 1948: 32)

Rhymeless alliterative verse, then, can be viewed as a more reliable source of evidence for word stress because the word to be used does not have to conform to the requirements of both the metre and the rhyme. As in OE, alliterating consonants are those at the beginning of a stressed syllable and we must assume that this correctly reflects phonetic word stress. Luick (1889 a: 394 ff.) points out that Rom words alliterate with the Gmc stress patterns of ModE although "we occasionally find that prefixes of Rom words bear the alliteration, which in ModE are unstressed..... we must look upon such cases as offences against the metre".

Tamson (1898) remarks that such examples are not merely occasional but occur far too frequently to be put down to "offences against the metre" and suggests that "such accentuations represented the actual pronunciation of the poets" (p. 57). Through a close examination of four ME alliterative texts (the Troy-Book (TB), the Morte Arthure (MA), Piers the Plowman (PP) and Richard the Redeles (RR)) he found that in disyllabic nouns without prefix "the French stress has throughout been replaced by the English one, i.e., the first syllable is accented" (p. 64) - there is one exception: uságe in PP. Consider:

(3.12) <u>déuer</u>	11 234, 590, 764	}	<u>TB</u>
<u>tóurment</u>	1 3295		
<u>córage</u>	11 536, 1725, 1922	}	<u>MA</u>
<u>mérueil</u>	11 2682, 2905		
<u>sólace</u>	11 54, 153, 239, 354, 659		

Similarly in prefixed disyllabic nouns, the tendency is for stress on the initial syllable as we would expect in native words, e.g., cómpas, prélate, próloge, rélikes, cómfordes, présens (TB). Although there are some cases where the French stressing is retained (e.g., defaute, defénce, redrésse - cf. Danielsson's 'distinguishable prefix'), a prevalence of initially stressed forms is a feature of all the alliterative poets. Again, with polysyllabic words "our alliterative poets closely agree among themselves, that is to say, Germanic or English accentuation prevails among them all." (p. 113).

Danielsson accounts for the occurrence of bisyllabic words with final stress by referring to Luick (1921) who suggests that they represent an "earlier intermediate accentuation $\angle \simeq (-)$ with secondary accent on the second syllable". Luick claims (1889 a and b, 1907, 1914, 1921) that this secondary stress can be used to indicate accent in verse like iambic pentameter where the line calls for a regular alternation of accented and unaccented syllables. In other words, because both syllables of the word bore some degree of phonetic stress, either one could be used to carry the metrical beat of the verse depending on the position it occurred in in the line (i.e., which of the syllables filled the strong position). Compare the occurrences of Cústance in the following lines from Chaucer's 'Man of Law's Tale':

- (3.13) a. Ůf whích Ĩ spéke thěr hé Cŭstáncě fónđ (1 576)
 b. "Ĩ ám yŏure dŏghtěr Cŭstáncě" quŏđ shé (1 1107)

Morsbach (1896: paragraphs 25-26) too is of the opinion that such stressings merely represent an old poetic convention. (Recall also, how secondary stresses in OE compounds may be used to fill primary rises in the verse).

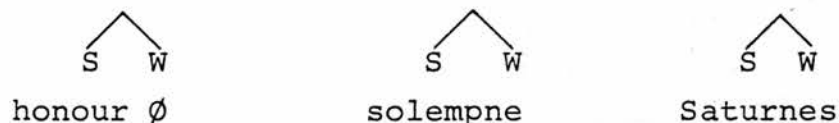
In ME therefore, the vast majority of bisyllabic loan-words (excluding prefixed verbs, which like native forms have root stress) would appear to have initial stress. However, in order to get such a stress pattern through the operation of the RSR, any long vowel in the second syllable would have had to have been shortened: otherwise it would automatically be assigned stress by virtue of containing a tense vowel (recall the RSR given in (3.7)). Such a shortening would in turn imply either the introduction of a synchronic vowel shortening rule, or else a lack of stress on that syllable and a consequent shortening of a vowel under low stress at some earlier stage in the language. Since there is no evidence for either of these proposals, it would appear that one is forced to conclude that, in HK's terms, all these words changed from the Romance to the native category and were thus assigned stress by the native stress rule.

Recall, however, Luick's claim for an intermediate accentuation of $\angle \supseteq$ ($_$) with secondary stress in place of the original French primary stress. This intermediate stage can be described phonologically as the extension of the domain of the OE Word Rule (2.44) to cover Romance loans.

We have already seen that the OE word tree is left-strong; the Romance word tree, however, is right-strong.

I have not formalised HK's RSR in terms of metrical phonology, but its operation may be informally characterised thus: the RSR assigns an S node in the domain of its application (cf. (3.7)) and metrical structure is erected according to the principles which are by now familiar:

(3.14)



Where there is more than one syllable to the left of the primary stress, these are organised into binary feet, e.g.,

(3.15)



(For a justification of this stress pattern, see the discussion that follows shortly on the place of secondary stress in Rom loanwords). In order to retain the correct position of the primary stress, the Romance Word Rule (RWR) must be formulated to assign right-strong prominence - in fact it is very similar to the ModE rule (cf. LP 1977, Giegerich 1985, etc.); perhaps hardly surprisingly since our modern stress rule is based on the Romance one.

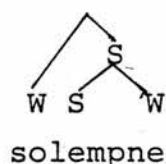
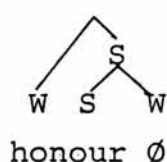
(3.16) Romance Word Rule

In a pair of sister nodes $[N_1 \ N_2]$, N_2 is Strong.

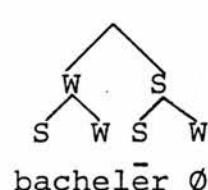
The application of the RSR and the RWR would produce the

following metrical trees on the examples in (3.14) and (3.15) when they were first borrowed into early ME:

(3.17) a.



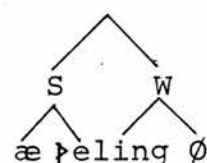
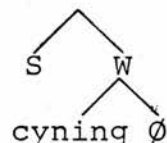
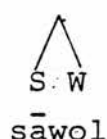
b.



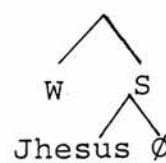
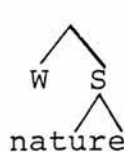
Strictly speaking, the examples in (3.17 a) would not be assigned structure by the RWR since there is only one actual node present. The unstressed first syllable would become part of the preceding foot as described in Chapter 1. In this Section, I use the notation exemplified in (3.17 a) to clarify the point about the substitution of the OE Word Rule for the RWR which I am about to make.

Compare now the different structures produced by the operation of the OE Word Rule on native items and the RWR on borrowed words. Consider the following:

(3.18) a. OE

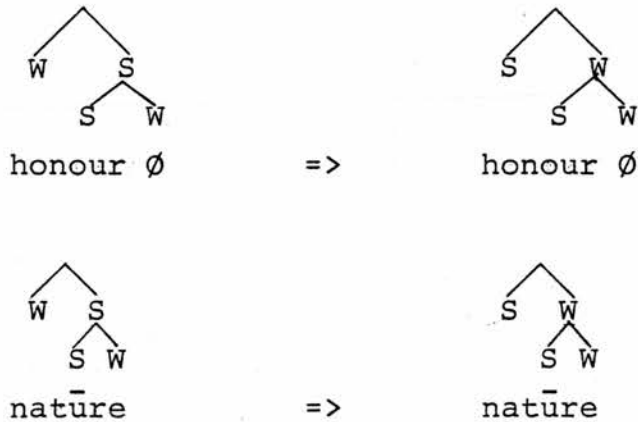


b. ME French loans



By maintaining the RSR for the assignment of foot structure to non-native words, (but with no SRR, so that any syllables to the left of the primary stress are organised into binary feet), and replacing the RWR with the OE one, we can produce the stress pattern described by Luick, i.e., $\angle \succeq (_)$:

(3.19)



That the secondary stress was subsequently weakened and lost is evidenced by the shortening and reduction of the vowels in these syllables.

3.1.2.2

Even more interesting is the fact that this observation is also applicable to tri- and polysyllabic words. The accentuation of such words has been put down to the operation of the "countertonic principle" (Walker 1791, Jordan 1974, Danielsson 1948): the syllable which received the secondary (countertonic) stress when a Romance word was spoken with an English pronunciation, receives primary stress when this word has been adopted into English and Anglicised, e.g., Fr conspìrateur --> Eng conspìrator; Lat acàdemía --> Eng acádemý (Danielsson 1948: paragraph 9 Intro, Walker 1791: 3).

It is a matter of controversy whether this antepenultimate stressing of Rom loan-words in English actually reflects the position of the secondary stresses in 'Vulgar' Latin and OFr. Luick (1907) quoting Schwan-Behrens (1899: paragraph 79) claims that this is the case, as does Ten Brink (1901): "In polysyllabic words there is a tendency to throw the accent two syllables further back, in short to reverse the positions of the primary and secondary accents" (paragraph 286) (cf. also Sonnenschein (1925), Grandgent (1908)).

Pope (1934), however, believes that the secondary stress was on the first syllable in Latin and early OFr (c 850 - c 1100) and that in late OFr and MFr "the intensity of the tonic stress was gradually diminished By the end of the seventeenth century French had become a language of almost level word-stress" (paragraph 223) (cf. also Kent (1945: paragraphs 65-66)). However, no matter what the position of the secondary stress in the original Latin or OFr form, if we take the 'countertonic principle' to be operative in ME, it would appear that Rom words in English did have a secondary stress two syllables before the primary stress.

The 'countertonic principle' is characterised by the conversion of the secondary stress given to a loan-word in its English pronunciation, into the primary stress of the word when it becomes totally Anglicised. The position of the secondary stress in the original language is therefore irrelevant. (Notice, however, that in a large number of polysyllabic words - notably those with two pretonic syllables - the position of the secondary stress in OFr (both in Luick's and in Pope's terms) and its place in an English pronunciation of the word, correspond: cònsecráte, cònvenáble, èxcusáble, ìnvísíble (examples from Chaucer)).

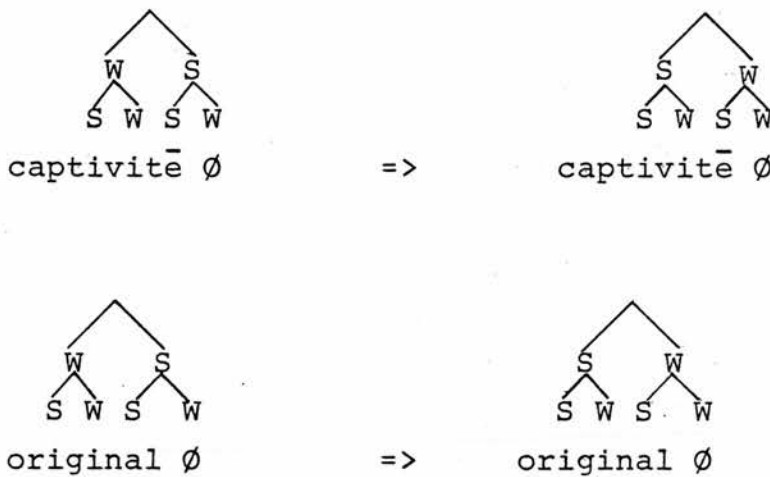
Danielsson (1948: paragraph 16) discusses in detail the evidence for counter-tonic stress in English, quoting from eModE orthoepists and lexicographers. The first to have observed the operation of this principle seems to have been Walker (1791) who says: "... when English polysyllables are derived from the Latin by dropping a syllable, scarcely any analogy is more apparent than the coincidence of the principal accent of the English word, and the secondary accent we give to the Latin word, in the English pronunciation of it.. Thus parsimony, ceremony, matrimony, melancholy, etc. have the accent on the first syllable, because in pronouncing the Latin words parsimonia, caeremonia, matrimonia, melancholia, etc. we are permitted, and prone, in our English pronunciation of these words to place the secondary accent on that syllable ..." (Walker 1791: Principles paragraph 503).

Danielsson adduces further evidence of a similar nature and also proposes Medieval Latin as the source for the adoption of the 'counter-tonic principle' in ME (see Danielsson paragraph 16 for details).

If we accept the operation of the 'counter-tonic principle', the application of the OE Word Rule to polysyllabic forms would produce a reversal of the primary and secondary stress positions as pointed out by Ten Brink. Consider:

(3.20)





The examples in (3.20) surface with primary stress where one would expect it after an application of the RSR - provided that any long vowels in a final syllable have somehow been shortened. But how does one account for vowel shortening which is not a regular quantity change, without first positing an intermediate stage where the syllable is only secondarily stressed? Without such a shortening, the RSR cannot produce the correct antepenultimate stress in words like bachel \bar{e} r and captivité \bar{e} but would simply assign it to the final syllable, i.e., the place of the OFr and early ME primary stress in such loans.

If we were to adopt a level ordering approach and assign stress before word-formation, we could avoid the problem and produce the correct pattern in báchel + \bar{e} r and cárpent + \bar{e} r, but not in *cáptiv + it \bar{e} or *óorigin + al. While having two classes of suffix would take care of original (if Class I affixation, like -al, takes place before stress assignment and Class II afterwards as in ModE), captivité, abóminable, advérsité, etc. still remain unaccounted for. Furthermore, even a change of category (so that these words undergo the native rule) would produce an ill-formed initial stress.

The only way to produce the correct stress pattern on all of these items is by adopting the solution suggested above and generalising the domain of the OE Word Rule to cover all lexemes. The acceptance of the operation of the 'countertonic principle' which this would involve, together with the subsequent shortening of the vowels in the originally primary stressed syllables which it implies is actually evidenced by the development of the OFr vowels in ME.

In his detailed study of the vowel quantity of AN loans in ME, Bliss (1952/3) observes that in general the long vowels of AN "remained long unless the stress was shifted to another syllable; in this case they were normally shortened and often later obscured; but the original length is frequently attested by spelling and rhyme in earlier Middle English" (1952: 128). The long vowel is retained primarily in monosyllabic words and in bisyllables with an unstressed prefix:

(3.21)	VL	<u>adv</u> [́] <u>isum</u>	ME	<u>av</u> [́] <u>is</u>	'advice'
		<u>cr</u> [́] <u>imen</u>		<u>cr</u> [́] <u>ime</u>	'crime'
		<u>w</u> [́] <u>isa</u>		<u>gu</u> [́] <u>ise</u>	'guise'
		<u>dē</u> [́] <u>vinant</u>		<u>dev</u> [́] <u>ine</u>	'divine'
		<u>gl</u> [́] <u>utem</u>		<u>gl</u> [́] <u>u</u>	'glue'

Examples with shifted stress and consequent shortening of a previously long tonic vowel are:

(3.22)	VL	<u>cur</u> [́] <u>tina</u>	ME	<u>c</u> [́] <u>urtine</u>	'curtain'
		<u>gent</u> [́] <u>ilem</u>		<u>g</u> [́] <u>entil</u>	'gentle'
		<u>comm</u> [́] <u>unem</u>		<u>c</u> [́] <u>omon</u>	'common'
		<u>plā</u> [́] <u>cere</u>		<u>pl</u> [́] <u>esir</u>	'pleasure'

Furthermore, although Bliss does not mention this point

himself, it is clear from his data that long (or lengthened) counter-tonic vowels in ME have undergone the Great Vowel Shift along with the native long stressed vowels:

(3.23)

a.	VL <u>factūra</u>	OFr <u>faitūre</u>	ME <u>fēture</u>	'feature'
b.	<u>rationem</u>	<u>raisūn</u>	<u>rēson</u>	'reason'
c.	<u>impedicāre</u>	<u>empeechier</u>	<u>empēche</u>	'impeach'
d.	* <u>bonitātem</u>	<u>buntē</u>	<u>bounte</u>	'bounty'
e.	<u>concilium</u>	<u>cuncilie</u>	<u>council</u>	'council'

The long counter-tonic vowels may be the result of a number of phonological processes: smoothing in (a) and (b), absorption of vowels in hiatus in (c), and lengthening before /n,m/ in (d) and (e). In each case we can observe the effects of a stress-shift, but as the counter-tonic syllable in Rom generally coincides with the initial syllable stress assigned by the native stress rule, the operation of the so-called 'counter-tonic principle' may be questioned.

However, once we have established that a shift in stress did take place, as we have seen, the only way to account for the contours found in words like captivité, original, mayntene, parforme is by reference to the 'counter-tonic principle'. This provides justification for the claim that the OE Word Rule's domain was extended over the whole vocabulary to the exclusion of the RWR. So at this intermediate stage, prominence relations would have been assigned in the lexicon by means of two stress rules - the OE one and the RSR - and the OE Word Rule.

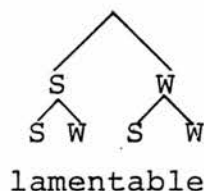
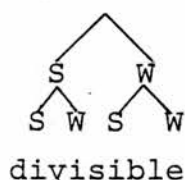
Another interesting piece of evidence for this hypothesis is provided by polysyllabic loan-words which are given by Levins (1570) and other early writers, a different accentuation (3.24 a) from that found in both later

orthoepists (e.g., Smith 1795) and in ModE (3.24 b):

(3.24	a.	dívisible	b.	divisible
		fraternite		fratérnity
		lámementable		laméntable
		délectable		deléctable
		éxcusable		excúsable

The stressings in (3.24 a) can be produced (with a secondary stress on the third syllable) by the OE Word Rule together with foot assignment by the RSR:

(3.25)



The manner in which we derive the stress patterns in (3.24 b), and indeed in the majority of eModE words will be discussed in the next Section. The situation we have in ME, however, is one in which the native word rule has been generalised to all the vocabulary. In a synchronic grammar of late ME, this would simply involve the deletion of the RWR and an extension of the domain of the English one.

It would of course be quite natural for speakers in such a linguistic situation to have two rules existing side by side in their grammar, and then to choose between them. It would even be possible for two or three different stressings of the one word to be around at the same time.

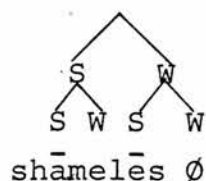
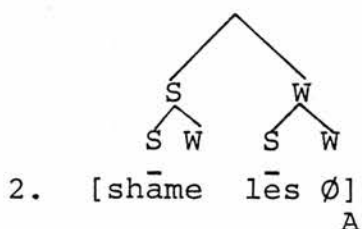
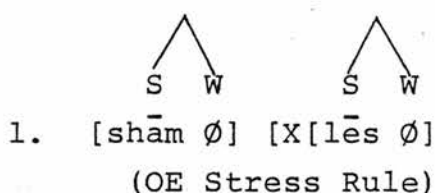
In order to avoid having the OE Word Rule operate twice in the derivation (once after the OE Stress Rule and once

after the RSR), the two stress rules would apply at the same level - each to its appropriate word class (i.e., native and Rom) - and then all lexical items would be subjected to the same word rule. A sample of this suggested derivation is given in (3.26). Since the RSR is not sensitive to morphological bracketings at this period of the language, it would seem plausible that the foreign elements in the vocabulary were treated as simple lexical items and not morphologically analysed as the native words were, in the early stages of borrowing. I propose therefore, that Rom loan-words be bracketed in the lexicon like the morphologically simple native words (cf. (2.51 a)).

(3.26) native

shāmeleēs

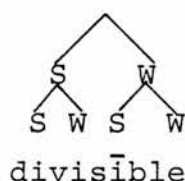
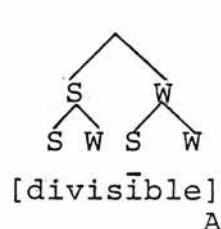
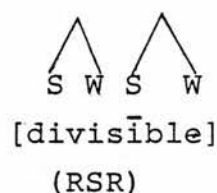
[shām] [X[lēs]



non-native

divisīble

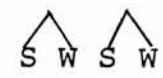
[divisīble]




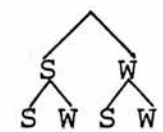
The derivations in (3.27) show that the Rom loans must be treated separately by the stress rules as discussed above - (3.27 b) indicates the ill-formed results of subjecting them to the same rules as native words.

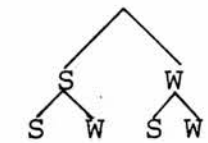
(3.27) a. captivitē
[captivitē]

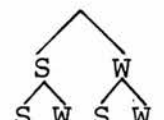
b. *captivitē
[captiv] [X[itē]]

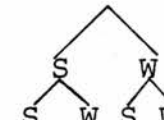
1. 
1. [captivitē ∅]
(RSR)


[captiv] [X[itē]]
(OE Stress Rule)

2. 
2. [captivitē ∅]
N


[captiv itē]
N


captivitē ∅

* 
captivitē

An alternative approach would be to have the RSR applying after word-formation. This would have the effect of allowing Rom loan-words to be entered into the lexicon and analysed into their morphemic components like the native entries. The first stress rule (OE) would apply only to native words; all vocabulary would pass through the word-formation section; the RSR would then assign stress to Rom loans and each lexical item would subsequently be subject to the same OE Word Rule.

Although this analysis might be preferred on the grounds of consistency, I intend to adopt my earlier proposal on the basis of some observations that may be made about the stress behaviour of prefixed loan-words.

3.1.2.3

It is generally claimed that Rom prefixes are stressed in nouns and unstressed in verbs following the native conventions, but the situation is not so clear-cut. Danielsson (1948) and Bliss (1953) claim that only "distinguishable" or "recognisable" prefixes are unstressed. Bliss defines these as those prefixes which may attach to stems also found in other words, e.g., conténe 'contain', deténe 'detain', as opposed to cóntreie 'country' or désert 'desert'. However, frequently occurring prefixes like de- and re- are often not subject to this rule even when they are 'recognisable'. The following examples may therefore be taken as monomorphemic:

(3.28)	<u>cómford</u>	<u>prólogue</u>
	<u>cómpass</u>	<u>présent</u>
	<u>déuyse</u>	<u>súbjects</u>
	<u>déceyt</u>	<u>prófers</u>

Ten Brink (1901: paragraph 287) says that "considerations of Romance composition hardly affect the accentuation ... unless an unaccented English particle occurs side by side with a Romance one of similar form and meaning". Examples of such prefixes are Rom a- and OE ā- (achaát, asénden); in- and un- (incúurable, unbíniden); mēs- and mis- (mes-cómforten, misbéden). Since all the OE prefixes had become unstressed by ME (with some alternation in the case of mis-), a Rom prefix with an identical form and meaning which may have been associated with the native

one, would be expected to behave in a similar manner. This would of course mean that they should be unstressed and not, as is often claimed, stressed before nouns like their native counterparts.

A study of Tamson's data for both nouns and verbs reveals that in the majority of cases, 'recognisable' prefixes (including those identified with native ones) are unstressed, while the other Rom prefixes are generally stressed in accordance with the 'countertonic principle'. I must emphasise, however, that this is just an observable tendency, and that there exists much fluctuation. Noticeably though, the prefixes which are least often stressed are those for which there are similar native forms, i.e., a-, in-, mis-.

With this in mind, let us look now at the way in which my first proposal can cope with this information.

The expansion of the OE Stress Rule which assigns stress to prefixes (i.e., $[[_]<Z>]$) is dropped in the ME $\langle N, A \rangle$

grammar to express the fact that no native prefixes receive stress. By extension, none of the Rom ones of identical form are stressed either. These latter, through being 'recognised' as prefixes, would be morphologically analysed in the lexical entry in the same way as native prefixes. Rom loans with 'indistinguishable' prefixes, on the other hand, would be treated as morphologically simple and given a completed lexical entry as discussed above, thus allowing them to be stressed on the prefix. The derivations in (3.29) show the applications of these observations to (a) a prefixed native word, (b) a Rom loan with the same prefix, and (c) one with an 'indistinguishable' prefix.

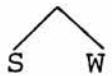
(3.29)

a. unb̄inden
(native)b. incurable
(Rom)c. comfordable
(Rom)


[[un]Z][b̄ind]

[[in]Z][curable]

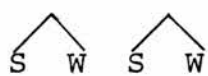
[comfordable]



1. [[un]Z][b̄ind Ø]



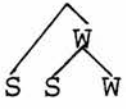
[[in]Z][curable]



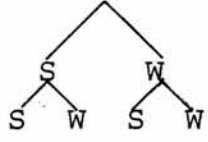
[comfordable]




2. [un b̄ind Ø]
V




[in curable]
A




[comfordable]
A



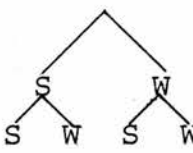
3. [unb̄inden]



unb̄inden



incurable



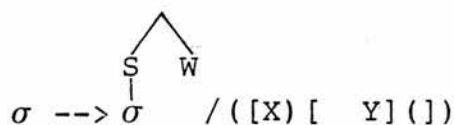
comfordable

Recall that the OE Word Rule erects a left-strong tree over any existing metrical structure, i.e., feet. Any prefixes which have not been assigned to feet are not taken into consideration by this rule and eventually become a weak node in the preceding foot. This works perfectly in OE because it is only the unstressed prefixes which have no structure. In ME, however, due to the Rom element, the situation is different. In a word like incurable, neither of the first two syllables has any metrical structure after

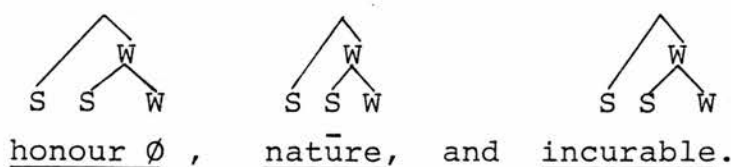
the application of the RSR. While in- is correctly unstressed, we would want our word rule to produce the output given in (3.29 b) i.e., with primary stress on -cur-. This can be done if our OE Word Rule is modified in ME to ignore only prefixes.

On the other hand, if we change the ordering of our rules and have prefixation take place at level 3 after the application of the Word Rule, we not only obtain the desired stress contour without an ungainly amendment, but also capture the beginnings of the separation of affixes into the two classes described by Siegel (1974) for ModE. This would involve the Rom prefixes being present at level 1 of the derivation and subject to the RSR. Native prefixes, however, are no longer available at this stage and the OE Stress Rule assigns stress only to roots and suffixes. This rule may now be called the ME Stress Rule and formalised as:

(3.30) ME Stress Rule



The domain of the ME Stress Rule is level 1 alongside the RSR. At level 2, all items are subject to the OE Word Rule, the first part of which may now be reformulated simply to erect left-strong binary trees working from right to left. It is only at level 3 that native (and identical Rom) prefixes are attached; inflectional morphology moves down to level 4 and compounding to level 5. In this way, we derive the stress patterns I have already given for



This is how the derivations in (3.29) would look under this new ordering:

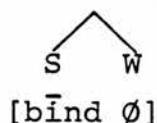
(3.31) a. unb̄inden (native)

[[un]Z][b̄ind]

b. incurable (Rom)

[[in]Z][curable]

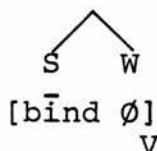
1.



[curable]



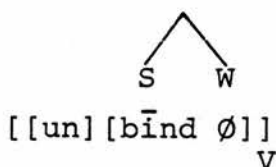
2.



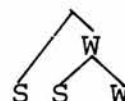
[curable]
A



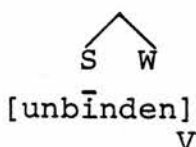
3.

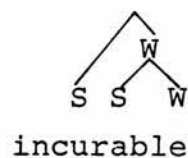
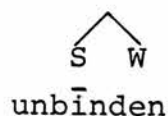


[[in][curable]]
A



4.

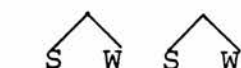


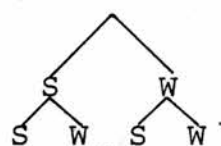


c. comfordable (Rom)

[comfordable]

1.

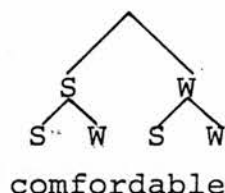




2. [comfordable]
A

3. _____

4. _____



3.1.3 Secondary stress

With the gradual loss of secondary stress in ME, original long vowels in OFr words which had come to stand (as a result of the stress shifts when borrowed into English) in unstressed syllables, were shortened. It is not clear when this took place - Jordan says that "already in the 13th and 14th centuries in natural colloquial speech the secondary accent of the suffix syllables had become lost" (Jordan 1974: paragraph 218), but gives no evidence for this claim. What is evident, however, is that these shortenings took place before the fifteenth century because none of these vowels undergo the Great Vowel Shift (3.32 a), e.g.,

(3.32)	a.	OFr	Látin	ME	Látin	ModE	Látin
			celár		célěr		céllar
			escũirúel		squířel		squířrel

b. OFr	spíne	ME	spíne /i:/	ModE	spíne
	bríef		bréf /e:/		bríef
	flóur		flóur /u:/		flóur

Compare the examples in (3.32 b) where there was no shift of stress and the original long vowel was maintained and vowel-shifted. (See the discussion of vowel quantity in AN loan-words in Section 3.1.2.2; also Bliss (1952)).

Although there is a general tendency for secondary stress to be lost in late ME and eModE, this is not always the case, and the vowels in those syllables that retained it developed in the same way as fully stressed vowels. The loss of secondary stress in ME, however, caused long vowels to be shortened and diphthongs to become monophthongised. The same is true in eModE, although sometimes "long vowels ... when they lost secondary stress ... had substituted for them the sound which develops from the corresponding ME short vowel; the latter process is of course analogical and modelled on the clearly recognisable correspondences that had developed in ME" (Dobson 1957: paragraph 267). Dobson argues that absence of stress did not produce "significant differences" in the ME short vowels until late ME. At this time, the loss of secondary stress "came to involve the substitution of the unstressed values for the stressed" (paragraph 267).

That the retention of secondary stress resulted in the vowels of these syllables developing in the same way as fully stressed vowels, is evident from the ModE pronunciations of prócess (n), díalògue (< ME short vowels), óccupy, émpire, íncreàse (n) (< ME long vowels), and éntràils, cúrfèw, fóllòw (< ME diphthongs).

Dobson describes the following contexts for the loss or retention of secondary stress in late ME and eModE:

- a) pretonic syllables which were separated from the main stress by at least one syllable always retain their secondary stress, e.g., understanding (cf. the 'countertonic principle' described in the preceding Sections);
- b) immediately preceding pretonic syllables tend to lose their stress, as do post-tonic syllables.

Notice that the only words with an immediately pretonic syllable which was not unstressed would have been prefixed Rom forms where the stress shift had not taken place.

Dobson claims that this vowel "in French was pronounced clearly, though without stress" and in a careful English pronunciation occurred with secondary stress, e.g., pròvide. However in "less careful" speech the vowel was reduced and thus obviously stressless. It is not clear what Dobson's grounds for these claims are - presumably ModE pronunciations. They cannot therefore be taken as clear evidence of late ME values.

We can, however, say that the loss of secondary stress was erratic in its operation, resulting in the co-existence of forms with or without this stress in eModE. This in turn produced variant developments in later stages of the language depending on which form prevailed. The disagreement amongst orthoepists of the sixteenth and seventeenth centuries as regards the quantity (and quality) of vowels in syllables which at some point bore secondary stress, is an indication of this variability in its loss or retention. Dobson discusses such evidence in detail, but a few examples will serve to illustrate the point here. The suffixes -able, -age and -ary have a short vowel in Hart⁶, but a long one in Hodges. The alternation between /i/ and /i:/ is found in the suffixes -y and -ly, e.g., body, heavenly and in words with French or Latin /i:/, e.g., determine, crocodile, mercy. Similarly in native and ON words, the suffix -ly is shown as /i/ < ME /i:/, e.g., boldly, namely (Hart), but also as /i/ in soberly, espec-

ially (Hodges, Newton).

Such variation may have been due not only to differences in loss or retention of secondary stress, but also perhaps to alternations due to an absence or presence of secondary stress in ME in the first place. As Ten Brink (1901) points out:

As regards the position of the secondary accent two frequently antagonistic tendencies may be recognised in the language of the fourteenth century.....: on the one hand a tendency to accentuate the second element of a compound felt as such, and consequently to emphasise a living derivative suffix by the accent; on the other hand a tendency to bring about a regular alternation of accented and unaccented syllables in a word. In Chaucer's poetry - as in that of all poets who aim more or less consistently at a regular alternation of accented and unaccented syllables - the latter tendency is, in case of conflict, destined to prevail, the former only attains to indirect expression in their work, namely, in so far as it tends to account for the possibility of shifting the primary accent. [Compare Luick and Morsbach quoted in Section 3.1.2.1 M.S.] The position of the principal accent once given - whether it be the normal or an exceptional one - that of the secondary accent follows in Chaucer as a matter of course. Words like wísdóm, mánhood have no secondary accent, but, on the other hand, mártirdòom, wómanhòod....; cf. further arýsen, for géten with òvercòmen, ùnderstónden."

(Ten Brink 1901: paragraph 282)

With these observations in mind, I propose to retain in ME the morphologically determined analysis of secondary stress

outlined for OE (see Chapter 2 for justification). This method of secondary stress assignment is maintained for native words (with the suggested amendment - cf. (3.30)), while the 'countertonic principle' discussed in Sections 3.1.2 ff. is applicable to Rom borrowings. Since it is only at the end of the ME period that we have any clear evidence of vowel reduction which indicates the weakening or loss of this stress, I suggest that it is at this point that the derivational processes described in the preceding Sections, cease to apply.

3.2.1 Early Modern English

Let us now examine more closely the stress contours found in eModE words. With the shortening of all unstressed vowels, we find that in a large section of the vocabulary, the application of either the OE Stress Rule (minus the expansion which handled suffixes) or the Rom Stress Rule, would produce the same results, e.g., bácin, cúrtine, lésson, divíne, éngin, óorigin, glútunus, chíldish, shámeles. However, as HK point out, there are also many items that cannot be accounted for in terms of the OE Stress Rule (recall the examples given in (3.9)). They claim that since the RSR can account for these as well as the stress in native words, it is this stress rule which becomes dominant in the language while the OE one, having become redundant, is dropped.

It was mentioned earlier that Fr loans like original do not conform in ME to the Fr accentuation as one would expect (*original), or to the native one (*óoriginal). By collapsing the stress rules of the Latin and French elements of the vocabulary, HK have created a certain degree of distortion.

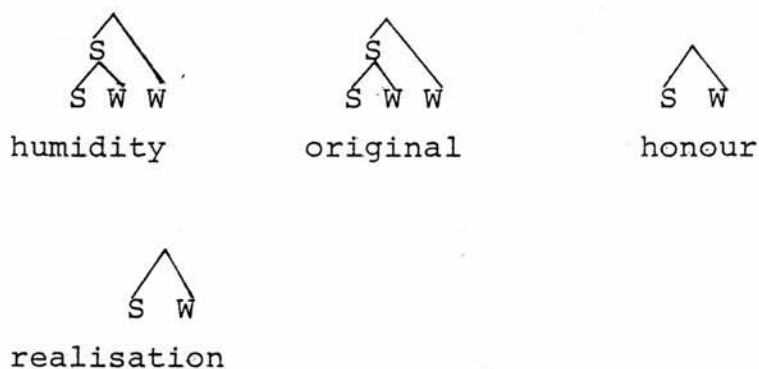
As I have shown, while one part of the RSR accounts for

Latin loans and the other for borrowings from AN (with a certain degree of overlap it is true - and collapsable with the exception feature mentioned in Section 3.1.1) in early ME, it is the OE Word Rule which produces the stress patterns observable by the middle of the ME period.

Recall the preceding discussion of the stress in words like chápele, bácheler, captívité, dívisible, etc.

If we now drop the OE Stress Rule from the grammar as HK suggest, let us see how the RSR can cope with the eModE data. The operation of the RSR can clearly be observed in examples like humíidity, fratérnity, oríginal, hónour, píty, realisátion: antepenultimate stress is assigned in the first three cases (the last two syllables are light), and penultimate stress in the other examples. In accordance with the rules of tree construction, a left-strong foot can be erected after the assignment of this primary stress (3.33 a).

(3.33) a.



b.

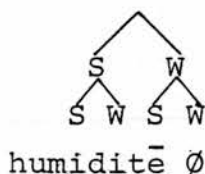


In those words where stress was not shifted and the final syllable still contains a long vowel, it again receives

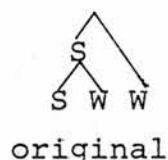
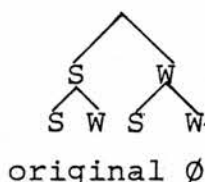
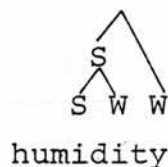
the primary stress of the word via the RSR (3.33 b).

Notice that while in ME, words like humidity, original, etc., would have had the primary stress on the same syllable as they now do in eModE, the operation of the stress rules would have created additional prominence relations in the form of a secondary stress on the final syllable. With the loss of this subsidiary stress and the consequent reduction of the vowel of that syllable, it becomes another weak sister to the right of the foot-initial stressed syllable picked out by the RSR. Compare, then, the metrical structures of the same words in ME (3.34 a) and in eModE (3.34 b):

(3.34) a.



b.



As I have already pointed out, it is only once the originally stressed vowels in the Fr loans have been reduced, and the Fr section of the RSR which assigns final stress dropped, that the RSR can be said to be able to correctly assign the primary stress in the sixteenth century vocabulary.

Consider now the examples in (3.35) where the primary stress of the word falls on a syllable preceding the

antepenultimate. Clearly, the RSR cannot handle these patterns. Under HK's analysis, the correct stress placement is achieved through the operation of their SRR:

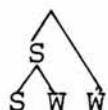
(3.35)	mónastery	ádmirable
	cémetery	hóspitable
	nécessary	súfferable
	állegory	cánonisable
	attáinableness (Smith)	mómentaryness

I have already shown (Chapter 2) that by adopting the lexicalist approach to stress placement, we can do away with the SRR in OE (and by extension, in ME too). I would like to argue that this rule is similarly redundant in eModE.

If stress were to be assigned by the RSR to the roots of the words in (3.35) prior to suffixation, the correct stress contour would emerge, e.g., mónast-, cémet-, cánon-, móment-, etc. In Siegel's terms then, these suffixes are all Class II, while those in (3.33) - -ity, -al, -ation - are Class I. Class I affixation takes place prior to stress assignment and the suffixes are therefore taken into consideration by the RSR which applies at the second level. Class II affixation takes place at level 3 and these suffixes are thus stress neutral. The procedure is the same as that for ModE, and as this has been amply discussed by other linguists in recent works (Siegel 1974, Strauss 1982, Kiparsky 1982, etc.) I will restrict myself here to one sample derivation (3.36).

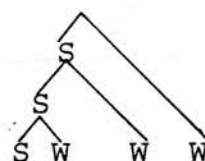
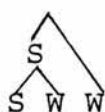
(3.36)	a. <u>humidity</u>	b. <u>cemetery</u>
	[humid] [X[ity]	[cemet] [X[ery]]

1. [[humid] [ity]]

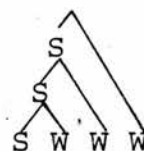
2. [humidity]
N

[cemet]

3. _____

[[cemet] [ɛry]]
N

humidity

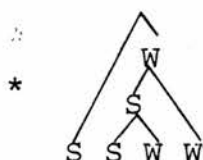


cemetery

There are a number of features of this derivation which must be commented on. Firstly, the reader will notice that the ordering of the levels has changed. Because we now need to have two classes of affix which attach to their various roots and stems at different points in the derivation, the domain of the RSR has to be moved from level 1 to level 2, leaving the first level free for Class I derivation. The stress rule scans the entire length of the string which arrives at level 2: the whole word in the case of humidity, but only the root in cemetery. At level 3 Class II derivation (i.e., of stress neutral affixes) takes place. It will be recalled that this level has already been used for this purpose in late ME, when it was proposed that all

affixation of unstressed (native) prefixes take place after stress assignment has been completed.

Secondly, we clearly no longer need the OE Word Rule which defined the prominence relations between the feet assigned by the stress rules in OE and ME. Its continued application in eModE would produce ill-formed trees



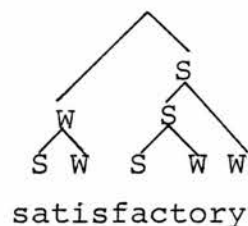
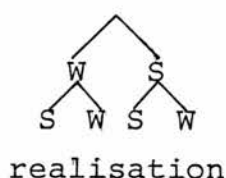
like humidity with primary stress on the initial syllable and a secondary stress on the antepenultimate. What we need it seems is a reintroduction of the Romance Word Rule (3.16) to ensure that the first syllable remains stressless. For convenience, I repeat the rule here. The name has been changed from the Romance Word Rule to the eModE Word Rule in order to capture the observation that it now applies to both the native and foreign elements of the vocabulary.

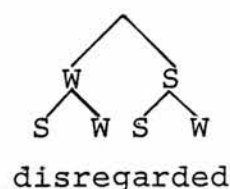
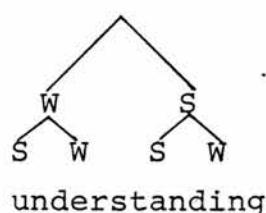
(3.37) eModE Word Rule

In a pair of sister nodes $[N_1 N_2]$, N_2 is Strong.

Where there is more than one syllable to the left of the main stress, these syllables are grouped into feet before the application of the eModE Word Rule. Hence we get:

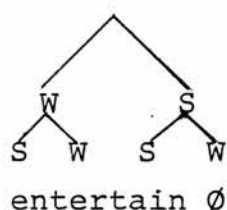
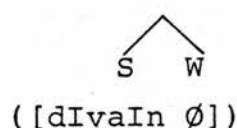
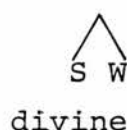
(3.38)





In those words where the main stress is on the final syllable, structure is erected according to the principles outlined in the preceding Chapters and the word rule operates in the same way.

(3.39)



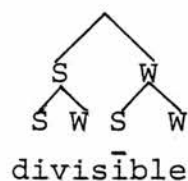
It will be wondered why, since it produces the same stress patterns as the ModE one proposed by LP and Giegerich (1985), the eModE Word Rule has not been given the same formulation. The answer lies in the fact that this analysis makes use of a Foot Template (1.16) in the assignment of metrical feet. Once the RSR has determined the place of the primary stress, all syllables to its right are gathered into the foot which is erected, as weak sisters. Any syllables to the left of the DTE are also grouped into feet and labelled in accordance with the Foot Template. Because of this, our word rule does not have to assign structure to metrical feet, but simply groups the feet already erected into a word tree. As a consequence,

each word tree will always be right-strong; the specification that the N_2 node must branch if it is to be strong, is unnecessary since all N_2 nodes in the domain of our eModE Word Rule branch.

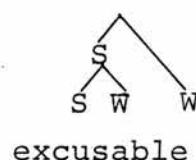
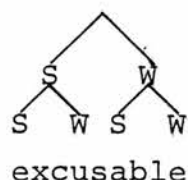
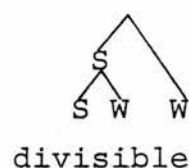
While this observation is true of non-compound words, it probably cannot be generalised to compound and phrasal stress. In this case, rather than have two separate rules, one may prefer to collapse the two into something like the LCPR proposed by LP. I leave this question open for further research.

Turning back to the structures assigned by the eModE Stress Rules, notice that while the position of the primary stress remains unchanged in many cases despite a different rule application, in others, we can observe the shift from an early ME countertonic stress to the one we find today. Consider, for example

(3.40) a. eME



b. eModE (and ModE)



It must now be decided at what point in the derivation the eModE Word Rule should apply. Since it must obviously

assign prominence to all lexical items, I suggest that it should be ordered after all derivation has been completed at level 3.

The analysis of the stress patterns of OE, ME and eModE which has been presented in the preceding two Chapters reveals how the ModE Stress Rules have developed from those found in the earlier stages of the language. The OE Stress Rule was purely morphologically conditioned, while in early ME we find two stress rules existing side by side: the old morphological one and a newly introduced, phonologically determined rule. By eModE, although the OE Stress Rule has been lost and the remaining rule is formulated in phonological terms, the actual assignment of stress is still sensitive to both phonological environment and morphological bracketing.

The other interesting observation which emerges as a direct consequence of adopting a level ordering approach to word-formation in the lexicon, is that the ModE situation with two classes of affix present at different stages in the derivation can be seen to develop from the OE system where there was only one. In the latter case, all affixation took place after stress assignment even though some prefixes could surface with primary stress. In eModE, we find that all the native OE affixes (e.g., -less, -dom, -ful, -hood, -ish, -ness, -some, -ward, -wise, -y, un-, under-, be-, for-) are Class II, still attached after stress and do not affect the stress assignment in any way. The non-native affixes can be found in both Classes I and II, but it is those which are most productive in English that are to be found in Class II alongside the native ones (e.g., -able, -age, -ary, -ive, -ry, -ment, dis-). As Siegel points out, some affixes are found in both classes (e.g., de-, re-, sub-, -al) which may be compared with the possible

alternation between stressed and unstressed variants of such prefixes in late ME/eModE too. It is the non-native Class I affixes which affect the position of the primary stress (cf. (3.36) for example).

In conclusion and by way of summary, I give below the level ordering that can be found in the lexicons of the various synchronic grammars at different periods of English.

(3.41) Level Ordering in English

a.	<u>OE</u>	b.	<u>eME</u>
level 1.	stress assignment (1 rule)	1.	stress (2 rules)
	2. derivation	2.	derivation
	3. inflections	3.	inflections
	4. compounding	4.	compounding
c.	<u>lME</u>	d.	<u>eModE</u>
1.	stress (2 rules)	1.	Class I derivation
2.	OE Word Rule	2.	stress (1 rule)
3.	prefixation	3.	Class II derivation
4.	inflections	4.	compounding
5.	compounding	5.	inflections

The only additional comment I have to make concerns the ordering of the compounding processes in eModE. I have not discussed compounding in ME and eModE because in the former the principles are the same as those in OE and may be deduced from the rules given, and in the latter I have assumed (without any given justification) an analysis like that of ModE. Through the gradual simplification and loss of inflections, we find they no longer occur on the first

element in a compound but, as Allen (1980) and others point out (cf. Section 2.2.5), qualify the compound as a whole. For this reason, the inflectional morphology in eModE (as in ModE) must be ordered after compounding (but see Kiparsky 1982).

Chapter 4

The English Vowel Length 'Conspiracy'

The preceding chapters have been devoted to establishing the syllabification and stress patterns of OE and ME lexical items. Through an examination of the supra-segmental structure of the language of these periods I believe that we can come to a clearer understanding of the lengthening and shortening processes which have been dubbed (Lass 1974) the 'length conspiracy'. My hypothesis rests on the conviction that vowel length is not a purely segmental feature and as such we must look above the level of the segment at the prosodic organisation of the language if we are to observe the conditioning factors of the changes (cf., for example, Leben 1977, Ingria 1980, Donegan and Stampe 1978 for similar proposals). I have already pointed out that segmental analyses cannot adequately capture the relationship that holds between each of the sound changes in question. In this chapter, I will firstly go through the lengthening or shortening processes^{es} in turn, looking critically at a number of earlier accounts which have treated each change in isolation and suggesting new interpretations of some of the facts. This will be followed by a brief assessment of the teleological approach adopted by Lass (1974) and then Section 4.5 will present my own proposal with respect to these quantity adjusting processes.

My account of all these changes is foot-based and it is in this way that it differs crucially from traditional treatments which have to make reference to 'stressed vowels'. Through adopting the foot domain (rather than a locally-determined stressed vowel domain), I claim

that these changes are not just linked by stress but by stress-timing. It is within the prosodic domain of the foot that we recognise the operation of the principle of isochrony and the phonetic tendency towards inverse proportionality between the quantity of the stressed syllable and the number of syllables in the foot: the more syllables there are in the foot, the shorter the expected realisation of each will be. This principle has been observed in allophonic variation (Abercrombie 1967, Classe 1939, Jones 1956), but not as a 'phonologising' factor in the description of diachronic phenomena (except of course by Luick 1898 - cf. Section 4.5). I hope to show that it is the structure of the foot that determines the quantity of the stressed syllable by way of implementation of these phonetic tendencies.

A noticeable feature of the account presented here is that it is not teleological in the sense of Lass (1974), in that it makes no reference to a diachronically distant goal. Additionally, the metrical notation is shown to be a suitable vehicle for an adequate representation of the lengthening and shortening processes, reflecting as it does, the suprasegmental structure of the language.

4.1 Homorganic Lengthening

4.1.1

This ninth century sound change lengthened vowels before clusters of nasal or liquid plus homorganic voiced consonant: /nd, mb, ld, rd, ng/¹. Lengthening is generally restricted to vowels and diphthongs in monosyllables, although it is found to a limited extent in bisyllables too (mainly before an inflectional ending, e.g., bīndan, lūmber, stāndan, etc.). It failed

when more than one unstressed syllable followed (e.g., hangode), before clusters of three consonants (e.g., hundred), and in unstressed words (e.g., and).

4.1.1.1

Recent attempts at an explanation of this lengthening by Eliason (1948) and Malsch (1976) have been criticised as inadequate by Phillips (1980) who proposes a purely phonetic basis for the change. I refer the reader to her paper for a critique of Eliason and Malsch, and intend only to look at the suitability of her own analysis. Phillips' explanation of homorganic lengthening is "based on a process known as phonologization, whereby a language may take a universal phonetic tendency and exaggerate it to such an extent that it becomes a language-specific property (Wang and Fillmore 1961: 130)" (Phillips 1980: 339-40).

It has often been pointed out that in ModE, vowels are longer before voiced consonants than before their voiceless counterparts (Gimson 1980 - whose source is Wiik 1965, Ladefoged 1982, etc.). This lengthened variant is realised as an allophone of the vowel in question (be it a 'long' or 'short' vowel phoneme); a lengthened short vowel would not be qualitatively the same as the equivalent long vowel phoneme. In other words, the high front vowel phonemes of RP may be represented as /i(:)/ and /I/, where the former is phonetically longer - whether this be characterised in the notation or not - as well as differing in quality. The lengthening of /I/ before a voiced consonant would be realised as [I:], e.g., bit [bIt] - bid [bI:d].

The point that Phillips makes is that had such vowel phonemes in ModE been distinguished purely in terms of

length, then the lengthened variants before voiced consonants would probably have been interpreted as members of the long vowel phoneme and not just allophones of the short one. She quotes an experiment by Chen (1970) which shows that vowels were consistently longer before /n,l,r/ plus voiced obstruent than before the same clusters where the obstruent was voiceless. What was even more notable, was the fact that the lengthening effect of the obstruent could be seen in the preceding sonorant as well as the vowel. For example, the length of the vowel in sent was 27 milliseconds shorter than that in send and the duration of the vowel and sonorant taken together also increased, from 269 to 378 milliseconds. The fact that the same results were found in bisyllables like lumber and lumper shows that the homorganic clusters do not have to be tautosyllabic in order to have this lengthening effect (as Eliason claims).

Phillips proposes that in OE, the tendency for vowels to lengthen before clusters of nasal/liquid plus homorganic voiced consonant was exaggerated to the extent that originally short vowels in this environment came to be grouped phonemically with the class of long vowels. This was made possible by the fact that OE did not have a qualitative difference as well as a quantitative one between its long and short vowel phonemes. In other words, there was a straight long/short dichotomy without additional tense/lax or other quality distinctions (Lass and Anderson 1975).

Up to this point, Phillips' argument is convincing, but I believe it falls down when she tries to claim the same motivation lies behind the shortening of vowels before consonant clusters other than those which cause lengthening ("The originally long vowels before pt (shortening) clusters were reinterpreted as belonging to the originally

short vowels before pt clusters, since in both instances the vowels were now shorter than all vowels before ld (lengthening) clusters" (p. 341)).

At first sight, this might seem a plausible explanation, but it leaves a number of factors unaccounted for:

- i) Vowel shortening takes place not only before consonant clusters in bisyllables, but also in trisyllabic words before clusters and before single consonants, e.g., husbonda, laferce < hūsbonda, lāferce. Phillips' analysis cannot account for the latter and (although she does not mention it in her paper) she would presumably have to propose a different explanation for this shortening before single consonants in trisyllabic words.

While I would not wish to deny that, in one sense, shortening in trisyllables does in fact have a different phonetic basis (i.e., the longer the word, the shorter the stressed syllable tends to be - the theory of inverse proportionality to which I will return), I see no valid reason for separating so distinctly the phonetic and prosodic accounts. It will become clear that shortening both before clusters and in trisyllables can be accounted for in the same phonetic terms.

Further, Phillips' account offers no explanation as to why a third consonant should inhibit lengthening, but not shortening (e.g., in gōdspell > godspell). In fact, originally long vowels before homorganic clusters plus a third consonant (e.g., bræmbblas) also get shortened. Phillips offers no reason for this either.

- ii) Related to the points made in i), is the question of why lengthening does not take place before homorganic clusters in trisyllabic forms, e.g., aldormann, hangode. If all we are concerned with here is a segmentally conditioned phenomenon, why doesn't lengthening take place in these instances where the voiced obstruent context (not followed by a third consonant) is obviously present? I will argue that what we have is a conflict of rules: on the one hand there is a tendency to lengthen vowels before homorganic clusters, and on the other, an opposing tendency to shorten them in polysyllabic feet.

4.1.1.2

On closer examination, it becomes apparent that what we are dealing with are not strictly segmental processes, but suprasegmentally conditioned changes. While the majority of lengthened vowels occur in monosyllabic words, shortening takes place in bi- and trisyllabic forms. By taking syllable and foot structure into account, all vowel shortening can be accounted for in a straightforward manner. Consider the examples in (4.1) where syllable boundaries are based on an initial maximalist syllabification:

(4.1)

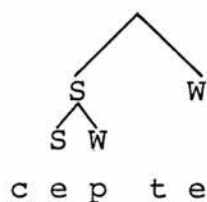
- | | | | | |
|----|--------------|---------------|----------------|----------|
| a. | cēp][te | fīl][þe | bēc][nan | blēd][de |
| b. | hūs][bon][da | sām][cu][cu | scēp][heor][de | |
| c. | lā][fer][ce | brē][þe][ren | sū][þer][ne | |

The stressed rhymes of the bisyllabic words in (4.1 a) are composed of three segments before, and two segments after shortening. Trisyllabic forms end up with either one or two segments in the rhymes of their stressed

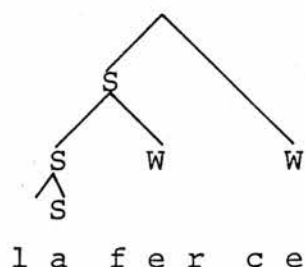
syllables.

Ignoring the examples in (4.1 b) for the moment, it would appear that the number of segments in the rhyme is inversely proportional to the number of syllables in the foot (foot boundaries in these instances corresponding with word boundaries). So the well-formed syllable structure may be represented as in (4.2 a) for bisyllables, and as in (4.2 b) for trisyllables:

(4.2) a.



b.



(I give only the structure of the rhyme).

The trisyllabic forms in (4.1 b) do not conform to the syllable template in (4.2 b), however. After vowel shortening the rhyme of the stressed syllable in, for example, husbonda, branches. These cases do not, however, constitute serious counter-evidence to the trisyllabic template proposed in (4.2 b) because the medial consonant clusters are such that the syllable boundary must fall between them (i.e., they are not permissible onsets). Short of deleting one of these consonants altogether, there is no way in which the structure of the syllable can be further reduced.

This tendency towards a uniform syllable structure of a branching rhyme in bisyllabic feet and a non-branching one in trisyllabic feet, can be used to provide a unitary

explanation of all vowel shortening processes whether they be before "two consonants" (husbonda, cepte), "one consonant" (laferce) or "three consonants" (godspell, bræmblas). I shall argue in Sections 4.5 ff. that such a suprasegmental analysis, while maintaining a phonetic basis for the changes, has far more explanatory power in the cases of OE vowel shortening processes.

4.1.2

In OE stressed monosyllables, the rhyme always branches, (since all word-final short vowels had been lengthened in the sixth century), but apart from that there is no restriction on its maximal length. The motivation for homorganic lengthening cannot therefore, be attributed to an effort to achieve the correct syllable structure - both lamb and lāmb are well-formed OE structures. Phillips' arguments would appear to be solid in these cases, with the sporadic lengthening in bisyllables an extension of the influence of the phonetic environment. This might perhaps have been made feasible by the fact that, as we have already noted, the voiced obstruent affected the duration of both the vowel and the sonorant which "behaved as a unit durationwise. In other words, the voicing of the consonant environment exercised durational influence on the vowel-sonorant sequence as a whole" (Chen 1970: 150).

It would be possible to argue that the vowel and sonorant constituted a "homogeneous continuum" and that the lengthening influence of the consonant spanned the whole continuum. This is not improbable considering the high degree of sonority which is the property of nasals and liquids as well as vowels, and might explain why the originally allophonic length became phonemicised before homorganic clusters but not before voiced consonants which were not

preceded by sonorants. The presence of the lengthened nasal or liquid added to the perception of the simultaneously lengthened vowel as durationally belonging to the class of long vowel phonemes. If vowel plus sonorant acted in these environments as durationally one unit, it may have allowed for lengthening in bisyllabic forms without any apparent violation of the syllable template. Lack of lengthening in trisyllabic words could be accounted for by the same reasoning - even if vowel and sonorant were treated as a unit, the result of lengthening would still be ill-formed structures with branching rhymes (but recall the operation of an opposing tendency which shortened vowels in such words).

4.1.2.1

Let us now turn to the question of why a third consonant after the homorganic cluster should inhibit lengthening. We have already seen that the presence of a syllable boundary between the sonorant and voiced stop does not inhibit lengthening (e.g., lūm][ber, bīn][dan), and since the boundary in cil][dru, lam][bru, hun][dred, etc. falls in the same place, this cannot be adduced as the explanation for lack of vowel lengthening. The inhibiting environment is clearly the following consonant.

Klatt (1975) found experimental evidence which showed that the voicing onset time (VOT) for word-initial voiced plosives was shorter when a vowel followed than when a sonorant followed the stop. The VOTs for three speakers KS, RK and DK are given in (4.3) below (= Klatt's Table 1). Each entry represents the average durational value (in milliseconds) obtained from five different words - four monosyllabic forms with /i, ε, ay, u/ nuclei, and one bisyllabic form.

(4.3) Voicing Onset Times

<u>Cluster</u>	<u>KS</u>	<u>RK</u>	<u>DK</u>	<u>Average</u>
/b/	12	14	6	11
/d/	23	17	11	17
/g/	36	25	19	27
/br/	16	18	9	14
/dr/	30	25	20	25
/gr/	36	32	38	35
/bl/	18	11	9	13
/gl/	34	24	21	26

"Averaging across place of articulation, the mean VOT for voiced plosives is 18 msec before a vowel and 23 msec before a sonorant consonant" (Klatt 1975: 689). Although in Klatt's examples the consonant clusters preceded stressed vowels, he claims that the VOTs for /b d g/ (unlike those for /p t k/) are about the same whether they precede a stressed or an unstressed vowel. It would seem therefore, that we can apply his conclusions to our examples cildru, hundred. My rather tentative proposal would be that the increased length of time before the onset of the voicing of the plosive before a sonorant as opposed to that standing before a vowel, may lessen the lengthening effect this voiced plosive has on the preceding vowel/sonorant unit thereby resulting in the non-association of the vowels in these cases with the class of long vowel phonemes.

In an appendix, Klatt notes some general tendencies for the expected VOT in sentence (i.e., non-utterance initial) contexts. While the VOT of voiced plosives is not affected by the position of /b d g/ in the word, it may be

influenced by the surrounding segments. Table 1 (given in (4.3) above) reflects the effects on VOT of the right-hand environment. Klatt suggests that if the plosive is preceded by a voiceless consonant, these values should be multiplied by 1.3, and by 0.8 if preceded by a nasal. While this would lessen the VOT in some of the examples of homorganic lengthening, it does not change the overall ratio between the VOT of voiced plosive plus vowel groups, and voiced plosive plus sonorant clusters. Notice that the specification of sonorant (rather than just any consonant) is unimportant to the present discussion since, due to the clustering properties of consonants in OE, these are the only consonants found after voiced plosives.

There are a few words without lengthening in which the voiced plosive of the homorganic cluster does not form an onset cluster with the following sonorant, e.g., cand][le, secund][lian, seld][nor. The syllable division in each case is after the /d/. It is evident, however, that these words have a stressed syllable structure which is already too long for the template - lengthening would simply increase this ill-formedness. As in the examples of samcucu and scepheorde discussed earlier, the segment count of the stressed rhyme cannot be further reduced by shortening (cp. also god][spell and bræm][blas after shortening).

An alternative explanation for (or perhaps just an additional factor contributing to,) the lack of lengthening before three consonants, may be the increased articulatory effort required in the production of the cluster. Since it is well known that vowels are generally shorter before clusters than before single consonants, this would seem a justifiable phonetic explanation in which syllable boundaries play no part at all.

To sum up, then, I have suggested in this section that lengthening before homorganic clusters and shortening before other clusters and in trisyllables are both quantitative changes with a phonetic basis. The former can be put down to the lengthening effect that clusters of nasal/liquid plus voiced obstruent have on a preceding vowel, while the shortening processes can be seen as the implementation of a different phonetic tendency; that of inversely proportional quantity relations within feet. The templates I have given in (4.2) for bisyllabic and trisyllabic OE words should not be taken as structures which must be "aimed at" and acquired at all cost. They are simply notational representations of the manifestation of this tendency in its most complete form in the different types of foot. While homorganic lengthening cannot be viewed as a direct consequence of this second tendency, it does not present any violation of it. The inverse proportionality tendency imposes only a lower limit on the quantity of a stressed monosyllable - its rhyme must minimally

branch, i.e., (W) S W Ø . Since there are no other syllables to be accommodated within that particular foot, the rhyme of a monosyllabic word may presumably be as long as is allowed by the phonotactic constraints of the language. This point will be taken up again in Section 4.5.1.

4.2 Shortening before clusters and in trisyllables

4.2.1

It is generally assumed by writers of OE grammars, that

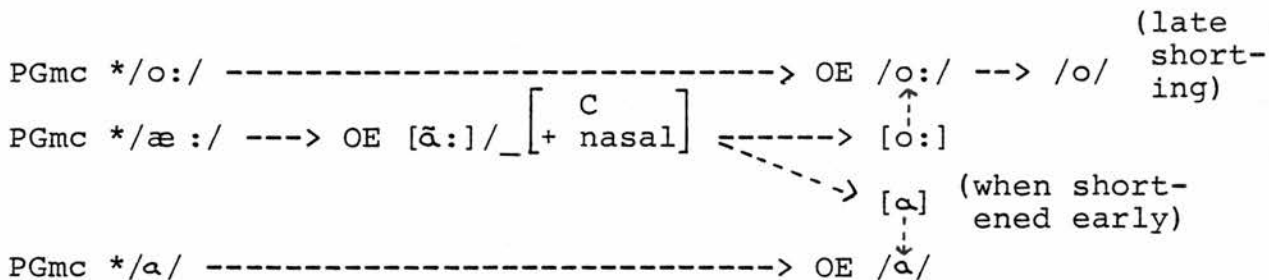
both shortening before consonant clusters and that in trisyllabic words took place in two stages (Campbell 1959, Jordan 1974, Weřna 1978). The first phase (shortening before clusters of more than two consonants, e.g., OE bræmblas, gōdspell, and in trisyllables where the stressed syllable is followed by more than one consonant, e.g., ēndlufon, sāmccucu, ēnwintre) is placed in the seventh and eighth centuries. In the second phase - from the tenth century onwards - the shortening environment is generalised to before clusters of two consonants and before one in trisyllables, e.g., blēdde, fylpe, hēringas, sūperne. The evidence for two distinct phases of shortening is not often cited, and since the results of both are not seen until the thirteenth century, Fisiak (1968: 30) groups the two stages together as occurring before 1000 in the case of pre-cluster shortening, and before 1100 for trisyllabic shortening. (The reason for this particular dating will be given shortly).

4.2.1.1

Let us look first at what evidence we have for positing an early phase of vowel shortening. The evidence adduced by Campbell (1959: paragraphs 127 fn. 1, 193(d), 285) for early shortening is (as far as I can piece it together) as follows. PGmc */æ:/ appears before nasals in OE as /o:/, e.g., mōna, ōm, cwōmon. This /o:/ is derived from a nasalised vowel [ã:], for when it is subject to very early shortening the result is [a] not [o] e.g., samccucu. Similarly, the early shortening of the corresponding mutated vowel is [æ] not [æ] e.g., bræmblas. PGmc */æ:/ develops when unshortened before a nasal to OE [o:] and merges with /o:/ from PGmc */o:/ e.g., mōna 'moon', ōm 'rust'. Any late shortenings of this vowel /o:/ from whichever source, yields /o/ e.g., brohte. These developments may be schematised

as follows:

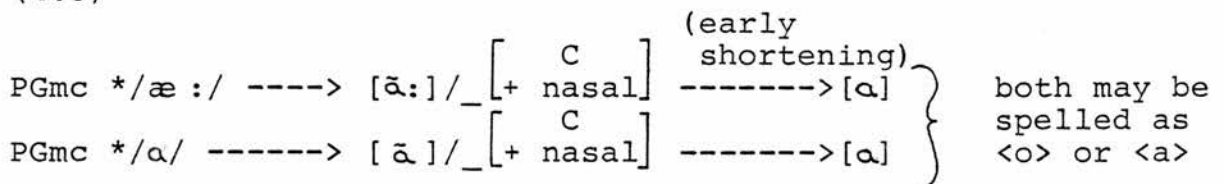
(4.4)



The stressed vowel in endlufon is from PGmc *[aI] which was mutated to OE /æ:/². After early shortening to /æ/, this vowel underwent a second mutation to /e/ (consonant groups of /m,n,l/ which remained palatal when preceded by a mutated vowel were capable of causing a second mutation - Campbell, paragraphs 192-3).

The variant spellings found in words containing vowels from PGmc */æ:/ before nasals (e.g., sam-/som-) are also found in the spelling of the vowel developed from PGmc */ǣ/. This latter vowel was also realised as [ǣ] before nasals and later fell in with OE /ǣ/ e.g., land/ lond, mann/monn. Since the development of both PGmc */æ:/ and PGmc */ǣ/ before nasals (when the former is shortened early) yields OE /ǣ/ spelled as both <o> and <a>, the somcucu spelling cannot be taken as counter-evidence to the early shortening proposal.

(4.5)



4.2.1.2

If Campbell is right, then clearly some vowels were short-

ened earlier than others. What must still be examined, however, is whether we are justified in positing different environments for the different periods of shortening. This is not immediately obvious. Firstly, we find trisyllabic shortening before two consonants in the later stage (e.g., hūsbonda, mūrberiȝe, clǣnsian, hlǣfdiȝe) as well as in the early one. It should be noted, however, that we cannot claim conclusively that these items were not shortened in the earlier period - there is no evidence similar to that adduced for the samcucu and endlufon cases. Secondly, there are only two examples cited for the early shortening before three consonants: brǣmblas and gōdspell. Cases of shortening with gemination (*blǣdre > blæddre, nǣdre > næddre etc.) have been attributed to late OE (Prins 1974: 109-10, Ross 1958: 119-20). The /b/ in brǣmblas is epenthetic and according to Weřna (paragraph 2.50) such epenthesis took place in late OE. But the earliest recorded examples of both bremel and brǣmbel are found in c. 1000, while brembles occurs only in 1175. The length of the vowel in these examples is uncertain, however: Bosworth-Toller give long vowels and the OED short ones (on the assumption that the epenthetic /b/ caused a simultaneous shortening of the vowel). It would appear, therefore, that the vowel shortening may have occurred before two consonants like the later cases. Greene (1980) points out that there is another possible alternative analysis of the shortening in brǣmblas if one takes the underlying form of the stem to be brǣm(b)el at the time the inflection is added. So the shortening may in fact even be attributed to a trisyllabic context. In any case, it does not seem wise to base the description of a sound change on such an example.

In gōdspell we have one of the problematic /s/ plus stop clusters which, as I have already pointed out in Chapter 2, are sometimes treated in OE as one and sometimes as two consonants. So, while there is no shortening in māsta, prēostas, we do find it in læstan and præstan. The cluster /-dsp-/ in gōdspell may therefore be seen to constitute two consonants.

Again the supposedly different early and late contexts may be conflated. Furthermore, and perhaps with more insight, such medial clusters when viewed in terms of syllable structure, are seen to be exactly the same as examples like cēpte, bādde, etc. which, in segmental terms, have to be described as constituting a different environment for the change. Following an initial maximal, final minimal syllabification, we find the structure of the stressed syllables identical:

(4.6)

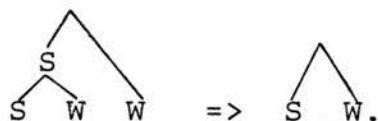
bræm] [(b)las

cēp] [te

gōd] [spell

bæd] [de

In other words, the stressed rhyme of each of these bi-syllabic forms has three terminal elements which, if the template given in (4.2 a) is correct, is too heavy for such a foot structure. We might therefore expect a shortening of the vowel in this context such that



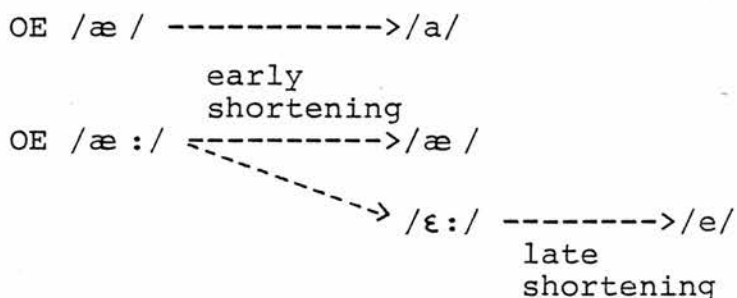
In terms of syllable structure, then, and because there is no argument for claiming that shortening before two

consonants did not in fact take place at the same stage (whether early or late) as shortening in bræmblas (cf. the argument below); one can say that there are no real grounds for positing two separate environments for these shortening processes.

4.2.2

The actual dating of the changes is a different matter, however. We have already seen that an early seventh century shortening must be posited in cases like samcucu and bræmblas. It is generally accepted, however, that there were earlier and later shortenings even within the assumed "second phase" of the change. This claim is based on the evidence of the shortened reflexes of OE /æ: / and /ɑ: /. In about 1100 OE /æ: / --> ME /a/, so those words which contained original /æ: /, if shortened before this date subsequently underwent the development to /a/ e.g., tæhte > tahte, læstan > lastan, fættian > fatten, hlæfdize > lavedi. Those words containing OE /æ: / which was shortened after this date, are found in ME with /e/ (via /ɛ: / e.g., clænlic > clenlich, sprædde > spredde, wræstan > wresten, ærende > erende, æmettiȝ > empti. This may be summarised as:

(4.7)



(N.B. that this could be an alternative account of the development of the stressed vowel in endlufon indicating a late shortening).

The shortening of OE /ɑ:/ shows similar effects. Early shortening resulted in ME /a/ e.g., āscian > aske, lāste > laste, while shortening after the twelfth century development of /ɑ:/ --> /ɔ:/ produced forms like holidai < hāli3dæ3, hotra < hātra and stiropes < stīrāpes.

Jordan (1974: paragraphs 23-4) claims that length was preserved and the vowel shortened in the later period, by the presence of a strong secondary stress. He cites examples like Ēadweard > Edward, chēapstaw > Chepstow, hāli3dæ3 > holiday, scēapheord > shepherd. A closer look at the data, however, throws up a lot of inconsistency. The examples in (4.8) are clearly compound and would all therefore have a strong secondary stress. Under the present analysis (see Section 2.2) they would

have a (S W) S W foot structure.

(4.8)

a. early shortening

OE hlæfdi3e > ME lavedi
hlæpewinge > lapwinge
stælwierþe > stalwarþe

tādapoll > taddepol

āctūn > Acton

Brād-ford > Bradford

b. late shortening

OE sāmester > ME semster
Ēastseaxe > Estaxe

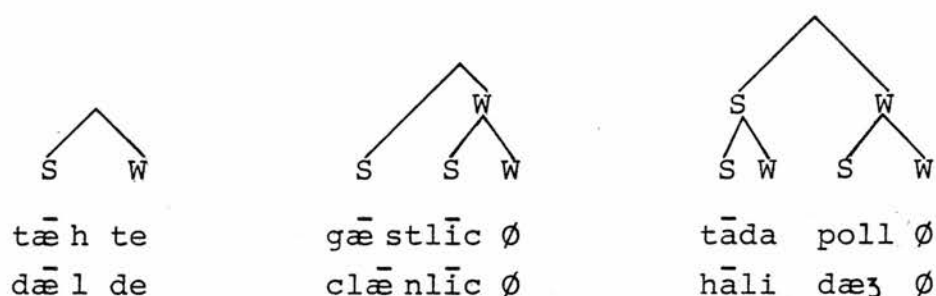
bānfyre > bonefire

hāli3dæ3 > holidai

cnāwlæcung > cnowleche

One cannot therefore claim that long vowels were preserved into the later period by secondary stress on a following syllable. Words with secondary stress show reflexes of both

(4.10)



It seems evident, therefore, that even if secondary stress played some part in delaying the shortening of the stressed vowel, it was not the sole operative factor. We have seen that the shortening process may have begun as early as the seventh century and continued until the twelfth spreading gradually across the lexicon, affecting different items at different times and not in any specific order. I find no evidence for positing different environments for two distinct stages of shortening. The most appropriate description of all instances of precluster and trisyllabic shortening can be reached by grouping them together as Fisiak (1968) does. I would not, however, agree with his separate dating for the two environments and propose that all shortening can be accounted for by rules, the implementations of which were gradual and most clearly observable only in the thirteenth century. These rules may be expressed in terms of syllable structure as mentioned in Section 4.1.1.2, with reference also to foot structure. This, together with a formulation of the rules, will be discussed in detail in Section 4.5.

4.3 ME Open Syllable Lengthening

4.3.1

ME open syllable lengthening (MEOSL) is said to have affected short stressed vowels in bisyllabic words with one medial consonant, i.e., in an open syllable under an initial maximal syllabification. Medial clusters such

as /sp,st,sk,sl/ which are permissible onsets are correctly predicted by such a syllabification as not blocking the operation of MEOSL. Consider the following (often-cited) examples:

(4.11)	OE	<u>strica</u>	>	ME	<u>stēke</u>
		<u>bere</u>	>		<u>bēre</u>
		<u>ʒeste</u>	>		<u>ʒēste</u>
		<u>nama</u>	>		<u>nāma</u>
		<u>wudu</u>	>		<u>wōde</u>
		<u>ʔrote</u>	>		<u>ʔrōte</u>

Traditional accounts date the changes between 1200 and 1400 with the first attestations of lengthening in the south occurring about a century after those in the north. It is generally assumed that the change took place in two stages, the first affecting only the non-high short vowels and the second the high ones, this too being related to topographical spread.

It is clear from the spelling of the examples in (4.11) that MEOSL of the high vowels also involved a qualitative change. Luick (1921), with whom Jordan (1974) and Dobson (1962) agree, proposes that while short vowels in OE were tense (and hence when lengthened /i/ --> /i:/ and /e/ --> /e:/, etc.), in ME they had become lax with the result that lengthening caused these short lax vowels to be associated with the closest existing long vowel phoneme, e.g., /I/ --> /e:/ and /ʊ/ --> /o:/. Further justification for the claim that at this stage /I/ and /ʊ/ were regarded as the short vowel equivalents of /e:/ and /o:/ comes from the converse shortening of /e:/ to /I/ and /o:/ to /ʊ/. Thus we find sick from earlier sēk (by shortening in derivatives like sēknesse), must < mōste and Monday < Mōnendai.

Stockwell (1961) on the other hand, claims that the high vowels did not lower, but that they acquired a central off-glide: /i/ --> /ih/ and /u/ --> /uh/. These new long vowels (representing /e:/ and /o:/ respectively) are distinguished from the original long vowels /i:/ and /u:/ which are analysed as /iy/ and /uw/. Although this allows him to account for lengthening and the shortening mentioned above without positing a quality change in the vowels, it also forces him into having two kinds of lengthening process: one where lengthening is characterised as the addition of a front or back glide (e.g., OE wilde --> wīld /i/ --> /iy/, grund --> grūnd /u/ --> /uw/) and another where a central glide /h/ is added (e.g., duru --> dōre /u/ --> /uh/). Furthermore, as Malsch and Fulcher (1975) point out, "his solution results in a chaotic formulation of the Great Vowel Shift, since some vowels would presumably change height (e.g., /ey/ > /iy/) and others simply switch off-glides (e.g., /ih/ > /iy/)" (1975: 303 fn. 1). All Stockwell's account seems to do therefore, is disguise the problem rather than solving it.

A different treatment of this aspect of MEOSL is presented by Lass (1969) and Malsch and Fulcher (1975) who claim that it was not just the high vowels which lowered. If we consider the reflexes of the lengthened vowels after the Great Vowel Shift (GVS), we find that we must posit lowering as well as lengthening for the mid vowels too.

(4.12) OE /u/ ---> /o:/ ---> /u:/

wudu wōde wood

MEOSL GVS

OE /o/ ---> /ɔ:/ ---> /o:/

nosu nōse nose

Without going into the details of their analyses, I would like simply to take this observation and look at it in the light of Luick's suggestion that in ME the short vowels had become more lax than they were in OE. We have already seen that there was a straightforward long/short vowel dichotomy in OE. In ME, however, while this phonemic distinction is retained, we also seem to be getting the first signs of the tense/lax opposition we find in ModE. So while the phonemic inventory does not change (except for the addition of the new phoneme /a(:)/ in ME), I suggest that the phonetic realisations of these vowels were different, i.e., the short ones were lax and the long ones tense, where both long and short phonemes had been tense in OE. This allows for the association of a ME lengthened short vowel with the long vowel phoneme nearest in quality.

The naturalness of the lengthening of [I] to [e:] (which is paralleled, although not verified, in the case of the other vowels in question) is supported by articulatory evidence which shows that the tongue arch for lax [I] is closer to that for [e:] than for [i:]. The OE and ME phonemic systems may be schematised as in (4.13 a) below, while (4.13 b) shows the possible MEOSL development.

(4.13) a.

<u>eOE</u>					
/i/	/i:/		/u/	/u:/	long = tense
/e/	/e:/		/o/	/o:/	short = tense
	/a/	/a:/			

<u>ME</u>					
/i/	/i:/		/u/	/u:/	long = tense
/e/	/e:/		/o/	/o:/	short = lax
	/a/	/a:/			

vowels within the same paradigm. In such cases, the quantity of either the inflected or the uninflected form is analogically extended to all other forms of the word, e.g.,

(4.14)	ME	<u>blāk</u>	<u>blāke</u>	>	ModE	<u>bläck</u>
		<u>hwāl</u>	<u>hwāle</u>			<u>whāle</u>
		<u>hēven</u>	<u>hēvenes</u>			<u>hēaven</u>

Bliss (1953), however, by comparing lists of native words and Anglo-Norman loans which have the environment for lengthening, but which do not in fact undergo the change, suggests the following set of inhibiting factors:

- a) a medial liquid or nasal, e.g., coler, galon, baril, merisc, hamor, tremor, bonet, senat, ganot, hæneþ.
- b) a final liquid or nasal (plus an optional consonant) unless the medial consonant is a labial, e.g., catel, metal, sadol, fæder, wæter, record, desert, seofon; with medial labial: fāvor, ēfen, pāper, lābel.
- c) a final /t/, e.g., brevet, closet, habit, profit.

These 'exceptions', however, themselves have exceptions. From his list of loanwords, Bliss finds thirteen of these: bācon, bāsin, blāson, brōcor, fāmos, jēlos, māson, mōment, ōdor, rāsor, revel, travel, tresor. Bliss' account, therefore, provides us only with a set of rather disparate environments which block the operation of MEOSL, but which have no more internal coherence or real explanatory power than that offered by the traditional grammars.

4.3.2.1

Malsch and Fulcher (1975) propose an analysis in which MEOSL is sensitive to morphological boundaries such that

Danchev (1983), however, does not regard these as counter-examples "for the simple reason that they would obviously follow their base forms" (p.71). Furthermore, he says that the majority of these words were not formed until after the period of MEOSL (e.g., the earliest OED entry for crazy is 1576, and for rakish 1706).

There are, however, other grounds for objecting to Malsch and Fulcher's account (and also to Danchev's who, although offering a different explanation for MEOSL, essentially bases his argument for the lack of lengthening in forms like seofon, wæter, etc. on the presence of a derivational morpheme).

Malsch and Fulcher, it seems to me, are making two distinct assumptions. Firstly, the presence of a # boundary in the words under discussion, and secondly, the coincidence of this boundary with the syllable boundary in such forms. While I would not dispute the fact that -er, -ig, -isc, etc. were productive suffixes in OE (recall examples like baker, writere, mīhtig, Englisc), it is not clear, as Minkova points out, that the examples quoted by Malsch and Fulcher (which on the surface look the same), are morphologically complex. It is not unusual to find derivational morphemes with the same phonological composition as sequences of simplex forms. We may look to ModE for a clear exemplification of this claim.

We find that an alveolar nasal followed by a /g/ will be realised as the velar nasal /ŋ/ with a loss of the stop when this cluster is morpheme-final, e.g., sing, singer, wing, sting, stinger. When the sequence /ŋg/ occurs morpheme-internally, however, the /g/ is generally retained, e.g., finger, linger, langor. Clearly, the word-final [ər] in the second set of examples, while of the same phonetic form as that in singer, stinger, etc.

is not the derivational morpheme of these examples. I believe that in the majority of the 'exceptions' to MEOSL, this is what we have: segmental sequences which have the same form as certain derivational suffixes. I find no morphological grounds for claiming that camel, castel, fæder, feþer, hamor, etc. are root plus suffix derivations.

Further, consider the paradigms of the strong neuter (werod, dēofol) and the -r stem (brōþor, fæder) nouns with regard to Malsch and Fulcher's second assumption. The vowel of the second syllable is syncopated after a long stem-syllable when the word is inflected. Short stem-syllable forms retain the medial vowel (cf. the same alternation mentioned in Section 2.1.1.3).

(4.16)	<u>Nom sg</u>	<u>Gen sg</u>	<u>Nom sg</u>	<u>Gen pl</u>
a.	<u>werod</u>	<u>werodes</u>	<u>fæder</u>	<u>fædera</u>
	<u>darop</u>	<u>daropes</u>		
b.	<u>dēofol</u>	<u>dēofles</u>	<u>brōþor</u>	<u>brōþra</u>
	<u>stýpel</u>	<u>stýples</u>		

In order to retain their medial vowels, the words in (4.16 a) must have short stressed syllables. The position of the syllable boundary depends of course on one's principles of syllabification: we[rod with an initial maximalist and wer][od on a final maximalist interpretation (I leave aside the ambisyllabic approach for the moment as it does not affect this particular argument). It is not clear which method Malsch and Fulcher have adopted; it would appear to be initial maximalism in simplex forms at least, hence þro][te, etc. On the basis of this, I assume that their definition of light and heavy syllables is the same as mine, i.e., V constitutes a light rhyme and VV/VC a heavy one.

Now if words like fæder had a derivational suffix, they ought to be syllabified in Malsch and Fulcher's terms as fæd][er making the first syllable heavy. Since we do not get syncope in the genitive plural form, this is clearly the wrong syllabification - the stressed syllable must be light, i.e. fæ][der. This would imply the absence of a # boundary, or at the very least, a lack of correspondence between the syllable and morpheme boundaries. An insistence that these two boundaries always coincide would certainly be a strong position, but one less open to the charge of circularity. In any case, Malsch and Fulcher's argument in fact relies on this implicit assumption: if the syllable and morpheme boundaries in sceadu did not coincide, then the first syllable would still be open in spite of the presence of a # boundary (scea][d#u) and therefore subject to MEOSL.

4.3.2.2

Danchev (1983) observes the universal tendency for vowels to lengthen in open syllables and claims that since MEOSL is clearly a phonetic process of this kind, it does not need further explanation in phonetic terms. He suggests that we should shift our attention to "its diachronic and diatopic parameters and, above all, to the vexed question of the cause of the change - a more macro-linguistically orientated approach" (p.63). He does not seem to regard universal phonetic tendencies as possible "causes" for a sound change and offers no attempt at an explanation of this tendency. It will turn out that these are two very important criteria in my own account (Sections 4.5 ff.).

Danchev proposes an account based on Anglo-Saxon and Scandinavian language contact: on inter-language

features which "accelerate development towards more explicit analytical structures in order to facilitate communication" (p.67). In Danchev's view, the reduction and eventual loss of the less important functional morphemes (however they may be defined), facilitated communication and also led to additional emphasis (in the form of an increased force of the dynamic accent) on the root morphemes. He claims that this increased force was reflected by the lengthening of the root vowel (cp. Luick 1898) in the "communicatively prominent syllable".

The lack of lengthening in words like bottom, bracken, poppy, steady, baron, cattle, cellar, wæter, seofon, etc. is due to the presence of a derivational morpheme, i.e., a morpheme of communicative importance. (Notice that while both Malsch and Fulcher's and Danchev's accounts of the 'exceptions' to MEOSL rely on the presence of a derivational morpheme, the latter in no way relates this to syllable structure). As I have already pointed out, it is not clear that the second syllables of such words constituted derivational morphemes and even if they did, (apart from -y), they have become opaque in most cases. The forms would appear to have become lexicalised (in semantic terms at any rate) and should best be treated as simplex words.

This is not the place, however, to go into the validity of inter-language phenomena in the explanation of sound change in general - although language contact is coming to be considered an important factor in the account of such changes (cf. the references quoted by Danchev, e.g., Dickerson and Dickerson 1977, Lüdtke 1980, Gray 1979).

In the particular case of MEOSL, one cannot ignore the essentially phonetic nature of the change, whether this

be put down to a universal tendency for vowels to lengthen in open syllables, an increase in the force of the stress on that syllable, or a "disturbance of the balance within the foot created by the loss of an unstressed light syllable" (Minkova 1982). The context for the lengthening can be quite precisely stated in phonetic terms and a bisyllabic word is a necessary prerequisite for the change in spite of Danchev's claims to the contrary (the lengthened monosyllabic examples that he quotes as counter-evidence to this can in fact be shown to have been disyllabic in OFr, or as not from OFr at all: face < OFr face; lake < OE lacu; peak is of uncertain origin (although OE Pēac in place names may be of Celtic origin).

4.3.2.3

Minkova (1982) proposes a reformulation of the MEOSL environment which does not have to resort to any of the above mentioned suggestions to account for the many so-called exceptions to the rule. She argues that over 80% of the forms which were disyllabic in ME and remain so in ModE do not show reflexes of the ME long vowels, while nearly 90% of those which have become monosyllabic do. Compare hovel (OE hofel), leather (OE leþer), poppy (OE popig) with clove (OE clofa), bake (OE bacan), smoke (OE smoca). Through a re-examination of the evidence for the dating of schwa loss, Minkova finds that the commonly accepted chronology - MEOSL preceding loss of [ə] - does not hold up, and since the two processes are obviously closely linked, proposes that the most positive assumption that can be made is the simultaneity of the two changes.

She dismisses the standard generative segmental analysis which restricts the operation of MEOSL to /__C!e# and

asserts that it operates in bisyllabic words composed of two light syllables. The loss of an unstressed light syllable (in this case the loss of final [ə]) adjacent to a foot-initial light syllable causes the above mentioned disturbance of the balance within the foot. Thus lengthening is described as the acquisition of rhythmic weight by the foot-initial light syllable such that the overall weight of the foot is preserved, e.g.,

(4.17)

in ɸe	name of	Crist -->	in ɸe	name of	Crist
/namə/			/na:m/		

By proposing the simultaneous operation of MEOSL and schwa loss, Minkova allows for a great deal of variety as the implementation of the two rules spreads gradually through the vocabulary.

Minkova uses the foot as her unit of rhythmic organisation in the sense of Abercrombie (1964: 28), i.e., as stretching from one stressed syllable to the next in spoken language. This differs slightly from the way it has been employed in this thesis where 'foot' refers to a metrical foot (LP, Selkirk 1980, Hayes 1981, etc.). However, Minkova's account of MEOSL can be incorporated into both interpretations of the unit, foot.

The validity of recognising bisyllabic sequences as phonological units, has been shown by a number of experiments, notably Lehiste's (1971) investigation of the ratio between the duration of vowels in the two syllables of words like skitty and skiddy in the Mid-western variety of General American. She claims that a negative correlation holds between the duration of two successive segments such that if an error is made in the

duration of one, it is compensated for in the following segment. In the Midwestern variety, skitty, skiddy and steady are pronounced with a medial flap which cannot be said to be more closely related to either the preceding or the following vowel. Lehiste interprets this as meaning that the articulatory program of such disyllables encompasses the whole CVCV word: the vowel duration ratio between skitty and skiddy was practically the same, while in absolute duration, skiddy was longer due to the underlying voicing of the medial consonant. "The duration of the second vowel is adjusted to the duration of the first, and the sequence of two vowels constitutes a unit of programming at some higher level." (Lehiste 1971: 165).

Grundt (1976) puts the following interpretation on this finding:

It may seem that Lehiste's discovery is important only for an understanding of how the phonetic correlates of linguistic units are organised ... Her discovery of vowel duration ratios as a principle of internal organisation of disyllabic words is a very important one in that it shows a physically measurable basis for considering the disyllabic sequence as a phonological unit if such a sequence constitutes a single articulatory program: and it accounts for the stability of such a unit in terms of negative correlation..... If it is the case that changes in distribution or categorisation can result from changes in the internal timing organisation of the syllable as a unit (i.e., compensatory lengthening M.S.), it is logical to assume that similar changes in the phonological contrasts may be entailed by changes in the internal timing organisation of disyllabic units.

(Grundt 1976: 9)

Minkova and Grundt both see MEOSL as essentially a

compensatory lengthening process induced by the loss of word-final [ə]:

- (4.18) name --> nāme /namə/ --> /na:m/
 mete --> mēte /metə/ --> /mɛ:t/
 rote --> rōte /rɔtə/ --> /rɔ:t/

Clearly, however, MEOSL cannot be a purely compensatory process linked with the dropping of [ə], since lengthening does not take place wherever it is lost, e.g., kept < kepte. True, such words would not fit Minkova's structural description for the change ($[(C)V[C']e\#]$) but her account is not explanatory in such cases - why should compensation within feet be restricted to precisely this environment?

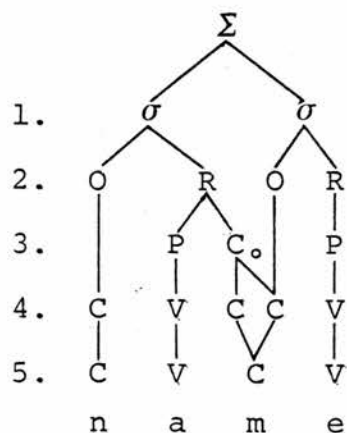
A more detailed answer to this question is proposed in the next Section, but before briefly examining the problem here, let us look at examples like cradle, hasel, beaver which are lengthened even though they remain bisyllabic. Most accounts treat these either as exceptions to the exceptions of MEOSL or else do not mention them at all. The only suggestion I have with regard to these cases is a very tentative one due to the absence of any real phonetic evidence from the period. Dobson (1962: 127) accounts for the existence of certain word forms in terms of "linkages in connected speech when the following word began with a vowel (e.g., boren in cut down to two syllables, bornin ...). Metre shows that syncope of this sort was a common feature of ME speech ...". Assuming an initial maximal syllabification, it would seem feasible for the foot boren in to be syllabified as $[[bo][re][nin]]$ with subsequent syncope of unstressed [ə]. It would be possible to propose a similar account for MEOSL in for example, cradel

followed by a word beginning with a vowel. A foot-internal syllabification like $[[cra][de][lof]]$ might lead to the interpretation of $[ə]$ as word-final and its loss make for lengthening of the vowel. This would also explain the sporadicness of MEOSL in such words. It is well known that resyllabifications take place in fast speech (Bailey 1978, Rudes 1976, Stampe 1973), but as we have no proper evidence of it in ME, this must necessarily be a cautious suggestion.

4.3.2.4

Before coming to my own analysis of MEOSL, I would like firstly, to have a look at the account proposed by Lass (1984). Recall the discussion in Section 2.1.1 relating to Lass' introduction into his phonological representation of suprasyllabic structure an extra 'moric' or 'quantitative' tier. This is tier 4, and the level at which the prosodic rules interpret sequences of vowels and consonants. By allowing for ambisyllabic consonants which are interpreted as belonging to two syllables at the same time and hence as 'pseudo geminates', Lass would propose a structure like that in (4.19) for name:

(4.19)



With the loss of the second syllable, the intervocalic consonant can no longer be ambisyllabic and so tiers 4

and 5 would be identical, specifically, a light syllable (recall that for Lass, the rhymes V and VC are light). In order for the stressed syllable to retain its weight, either the vowel or the consonant must lengthen. At this period, only the former is possible (see discussion of geminate consonants in Section 2.1.3 and Kurath 1956). "Thus", claims Lass, "OSL is a case where - prosodically - 'nothing happens'. A syllable heavy on a more 'abstract' level (tier 4) is replaced by one heavy at a lower level: i.e., tiers 4 and 5 are now identical" (Lass 1984: 5). He claims that what we in fact have, is the substitution of one foot type for another quantitatively equivalent one, the result being a 'preferred' $\bar{\sigma}$ type.

I have already shown (Section 2.1.2) that ambisyllabicity is unnecessary in OE and eME, especially Lass' kind of ambisyllabicity which has no phonetic grounding. Consequently, there is no call for introducing tier 4. So, while the stressed syllable in words like name is light (because they have a rhyme composed of V once pseudo-geminates are removed from the analysis) before MEOSL, it is heavy after the process. Be that as it may, one cannot argue with Lass' claim that MEOSL is the replacement of $\check{\sigma} \check{\sigma}$ feet by $\bar{\sigma}$. But this is merely a statement of the facts: a description of the state of affairs before and after the change and has no explanatory power.

The latter is to be found in Lass' view of MEOSL as a "quantitative process with movement in a 'preferred' direction along a hierarchy of foot configurations." (p.13). Compare this with Minkova's claim that MEOSL results in the "preservation of overall rhythmic weight of the foot" (1982: 51). Clearly, MEOSL must be quantitative in that syllable weight crucially gets adjusted, but at the same time the domain of the change

is the prosodic foot, which suggests a rhythmic operation. We have already noted that this process cannot be a purely compensatory one and it is now evident that it is connected with syllable quantity and foot structure.

4.3.3

I would want to dispute Lass' claim that a 'preferred' structure is 'aimed' at, this structure being $\bar{\sigma}$. There is no evidence to support this, bearing in mind the existence of numerous other foot configurations (e.g., $\bar{\sigma}\sigma$, $\check{\sigma}\check{\sigma}$, $\check{\sigma}\check{\sigma}\check{\sigma}$ to name a few). Lass himself does not deny this.

While the result of MEOSL may be $\bar{\sigma}$, this is not true of all the other quantitative changes. What emerges from an examination of these processes as a whole (as we shall see in the next Section) is that we must separate the notion of syllable quantity from that of foot structure, while at the same time noting their interdependence. I will argue that syllable weight is crucially determined by foot structure and consequently there is not just one 'preferred' foot or syllable type, but several depending on the internal structure of the prosodic foot. Central to my argument will be the claim that syllable quantity is adjusted in such a way that it is inversely proportional to the number of syllables in the foot. It is as a natural consequence of this phonetic tendency that the weight of a stressed syllable is increased once it ceases to be part of a bisyllabic foot, but constitutes one on its own (as is the case in MEOSL).

For a more detailed discussion of this principle and the place of MEOSL within the larger diachronic view of the quantitative changes as a whole, together with

a formalisation of the processes, please see Sections 4.5 ff.

4.4 The Length "Conspiracy"

4.4.1

In his paper entitled "Linguistic orthogenesis? Scots vowel quantity and the English length conspiracy" (1974), Lass sees the vowel quantity processes discussed in the preceding sections of this Chapter (together with the sixth century WGmc lengthening of vowels before a morpheme boundary) as forming the implementation of a diachronic linguistic conspiracy in which each rule removes one environment from the total set where idiosyncratic contrastive vowel quantity can occur. Thus, each rule (the formalisations of which I have not yet given), once implemented, becomes a redundancy rule making length predictable over its domain rather than free as it was before.

Each member of this conspiracy Lass argues, is a length-neutralising rule, and by the end of MEOSL there is only one place in which quantity is still free: in stressed monosyllables closed by one consonant. The following minimal pairs from OE, distinguished by length alone, exemplify this set:

(4.20)	OE	<u>æt</u>	'at, near'	<u>ǣt</u>	'food'
		<u>ful</u>	'full'	<u>fūl</u>	'foul'
		<u>hol</u>	'hollow'	<u>hōl</u>	'foolish speech'
		<u>man</u>	'man, one'	<u>mān</u>	'crime'
		<u>col</u>	'coal'	<u>cōl</u>	'cold'
		<u>weg</u>	'way, path'	<u>wēg</u>	'weight'

This permits Lass to list the full set of neutralisation

contexts in English dialects as:

(4.21)

\bar{V}/V neutralised/	$\left\{ \begin{array}{l} _ \# \\ _ CCC \\ _ CCVCVC_ \# \\ _ R,C, \\ _ CC \\ _ CVCVC_ \# \\ \# C_ CVC_ \# \end{array} \right\}$	$\left\{ \begin{array}{l} \text{(WGmc word-final lengthening)} \\ \text{(pre-cluster shortening)} \\ \text{(trisyllabic shortening)} \\ \text{(homorganic lengthening)} \\ \text{(pre-cluster shortening)} \\ \text{(trisyllabic shortening)} \\ \text{(MEOSL)} \end{array} \right\}$
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(where R,C, = resonant + homorganic voiced stop)

Notice that (4.21) reflects Lass' own notation.

In Scots dialects, however, Lass claims that the conspiracy was carried to its end making all vowel length allophonic. This was the result of the operation of a further sound change, Aitken's Law, which made vowel length predictable in the one remaining environment: C₀__C#. The effect of this seventeenth century change was to lengthen vowels followed by /v,ð,z,r/ or a morpheme boundary. In all other contexts, the vowel was short. The only vowels which were not lengthened were /ɛ,ʌ/ from ME /i,u/. Aitken's Law may thus be informally stated as:

- (4.22) a) All long vowels (and diphthongs) shorten everywhere except before /r,v,z,ð,#/.
- b) The non-high short vowels /e,a,o/ lengthen in the same environment.

(Lass 1974: 320)

Examples showing the operation of Aitken's Law are:

(4.23)	[i]	<u>beat</u>	[i:]	<u>beer</u>
	[e]	<u>bait</u>	[e:]	<u>brave</u>

[a]	<u>fat</u>	[a:]	<u>has</u>
[y]	<u>foot</u>	[y:]	<u>do</u>
[o]	<u>coat</u>	[o:]	<u>clothe</u>
[hid]	<u>hid</u>	[hi:d]	<u>he'd</u>
[bryd]	<u>brood</u>	[bry:d]	<u>brewed</u>

4.4.2.1

A conspiracy has been defined by Lass (1974: 311) as

... a relation holding for a pair or n-tuple of rules such that: (a) the rules are not 'formally related' in terms of collapsibility by current abbreviatory notations; but (b) their effects imply some kind of 'common motivation' or 'generalisation'; so that (c) it appears that they can insightfully be referred to as some higher-order relation or meta-structure that is (d) roughly 'teleological' in orientation.

He argues that the quantity changes described above are a case of orthogenesis in the development of the English language. Lass uses the term 'orthogenesis' in the broad sense of a sequence of goal-directed historical processes or evolutionary changes:

I would claim that there are cases where effects precede (in time) their (final) causes. The classic instance will be where a given synchronic state will be insightfully interpretable (or interpretable at all) only as either the aimed-at result of a series of past events, or as a stage in the implementation of that result. And the past events themselves - i.e., without reference to their ultimate goal - will be 'irrational', that is unconnected, inexplicable. They must be viewed, in order to make sense, as steps in the implementation of the synchronic state to be explained, and that state itself serves as their explanation."

(Lass 1974: 312; emphasis his)

The 'ultimate goal' in this particular instance is the elimination of phonemic vowel length. The important point to note here is that Lass' analysis of these changes as a conspiracy means that he considers them 'unconnected, inexplicable' without reference to a final goal. I will show that this is not in fact the case and that these changes have an internal cohesion which is separable from the end results of their implementation. So even if one does not accept the general arguments against teleological explanation which I outline below, Lass' analysis can be shown to be inappropriate on his own terms.

4.4.2.2

The two main criticisms which are levelled against the teleological approach may be found in Vincent (1978) and a later work by Lass himself (Lass 1980). Vincent recognises two possible forms of explanation: causal - because of x; and teleological - in order that x. One problem connected with a teleological explanation (and not only in language change) is that of future reference: "how can an event in the future cause something which has already happened or is happening?" (Vincent 1978: 410).

A way out of this dilemma is to invoke intention on the part of the agent - in the case of language, the speaker - as the 'efficient cause', in which case goal-directed activity may be regarded as goal-intended activity. This, of course, raises the question of conscious or unconscious intent. While the latter cannot seriously be maintained on the part of speakers, the former has often been used in the explanation of linguistic phenomena which are ascribed to the avoidance of homophony, preservation of contrast, etc.

Vincent quotes Andersen (1973) in distinguishing between

- a) teleology of purpose - conscious intent, i.e., change which is 'wilful distortions of inherited patterns'; and
- b) teleology of function - defining the function of an element within the system.

He claims that while teleology of purpose plays no part in sound change, it may be seen to do so in other types of linguistic change, as for example, when speakers find a strategy to remedy a situation of potential confusion (e.g., homophony) which is produced by the operation of some sound change. The existence of such situations is in itself evidence against the argument for teleological sound change: if language had a 'conscious intent' or will of its own, the change would not have been allowed to happen in the first place as its undesirable effect would have been 'foreseen'. By the same reasoning, nor is sound change under the complete control of the speaker, otherwise he too would be able to forestall the action where necessary. Primarily on the basis of such methodological arguments, Vincent rules out the possibility of teleology of purpose in sound change, of which he says Lass (1974) is an example.

Lass (1980), however, goes further than this by claiming that teleology of function is also inadmissible as a mode of explanation on the grounds that it is non-predictive and irrational. Without going into the details of his argument, I shall outline his conclusions which I believe to be important and relevant to the present discussion, whether or not we accept his analysis of functionalism.

Lass claims² that the only 'true explanations' are those which are based on deductive inference. Such a Deductive-Nomological schema provides explanations which adhere to certain universal 'laws', the outcomes of which are therefore predictable. It would appear, however, that this type of explanation is not available in linguistic change since language does not seem to be subject to 'laws' in the same sense that physical objects are subject to laws. If this is the only (or the 'best') mode of explanation available - and this is a subject of much debate (cf. Lass (1974) for a discussion and references) - and if it is not possible in historical linguistics, what status do non-causal explanations have? Lass argues that deductivism is not the only source of knowledge or indeed that "explanation in that restrictive sense (is) the only legitimate goal for historical linguistics" (p.146). What one often seems to get is a confusion of terminology: the use of 'explanation' to describe what is in fact the proposal of a different 'model' or description - an equally valid activity. This problem may be overcome by adopting the less restrictive definition of 'explanation' as something that will "give more information about a context which will show how different parts of it are related and what further expectations we should have of it" (Hesse 1966: 53).

Lass suggests we call such non-causal explanations 'insight' in order to differentiate between 'intelligibility' and the 'logical necessity' of a causal explanation. Such 'insight' may be obtained through making appropriate generalisations or new taxonomic schemata which may confer order or coherence on previously unordered domains and thereby make for a deeper understanding of a change as part of a structure or pattern. As such then, non-empirical or non-deductive arguments

need not be irrational or inferior.

4.4.2.3

What I propose in the next Section (Section 4.5.1) is not therefore intended to be a causal explanation, for even if we do not accept Lass' claim that such explanations are not possible in historical linguistics, I would not wish to claim that I have pinpointed a single factor which in early OE triggered the lengthening and shortening processes. I do not believe that such a statement would be justifiable due to the problems of establishing the existence of such a 'law'. This does not mean, however, that my proposal depends on positing an end goal, and as such is essentially non-teleological.

The suggestion made in Chapter 1 that there may exist a 'causal relation' between the changes strongly depends on an acceptance of Árnason's definition of the term 'causal relation' which was used in the sense of 'necessary condition' for a change to take place. In other words, the presence of a phenomenon X may be taken to be a necessary (but not always a sufficient) condition for the occurrence of a phenomenon Y. I pointed out, however, that I am not sure that this is an appropriate definition of 'causal' even though the situation described may actually exist in historical linguistics, and that perhaps another term should be used to define it. All that can be said with any degree of certainty in this particular instance under discussion, is that a relationship exists between two phenomena without one of them necessarily being the cause of, or explanation for, the other. In other words, when change Y takes place, X is always present (and hence there exists a relationship between the two phenomena), but one cannot establish without doubt that it is X and

nothing else that triggered Y.

The proposal I put forward suggests that the connection between the vowel length adjustments in question may be insightfully accounted for in terms of the principle of isochrony found in stress-timed languages and the tendency for inverse proportionality between foot and syllable weight which is associated with it. My claim is that there exists a relationship between these phonetic tendencies which are present in English, and the occurrence of the vowel length adjustments. The tendencies then, are 'necessary conditions' for the changes to take place, but it cannot be established with any certainty that they constitute a 'sufficient' cause (in the sense that the sound changes took place because of these phonetic tendencies).

Each of the changes which affects the quantity of stressed vowels may be separately phonetically accounted for, but its relationship with the other changes and with the phonetic principles mentioned above allows it to be seen as part of a pattern which is the result of their implementation. The analysis which follows defines more clearly the precise nature of this relationship and how each element in the pattern is connected, by virtue of its shared foot domain, to the other elements. This proposal might therefore be best described in Lass' terms as the imposition of some coherence on what may seem to be a series of unordered or unconnected events; as primarily an "explication of pattern and structure" within the diachronic development of the language.

4.5 The 'Inverse Proportionality' Hypothesis

4.5.1

Let us begin by looking briefly at an account of the

sound changes under discussion which has been put forward by Luick (1898). This concerns the idea of preferred syllable and foot structures. Luick proposes that stressed syllables (in OE?) may have any one of three degrees of quantity depending on the structure of the whole word:

(4.24) Luick's degrees of quantity

1.	short V in open syllable	V-
2.	short V + short C	VC
	long V in open syllable	\bar{V} -
3.	short V + long C	$V\bar{C}$
	short V + two Cs	VCC
	long V + short C	$\bar{V}C$

Each degree differs from the preceding one by the addition of one segment. Luick claims that degree 3 is 'normal'³ for monosyllables, degree 2 for bisyllables and degree 1 for trisyllables.

These 'normal' quantities are initially defined in relation to words, but he later recognises that words are conceptual and not phonetic units and that the adjustments he proposes can only be relevant with respect to the latter. Luick therefore introduces the notion of 'sprechtakt' (p.355) which he defines as a syllable group dominated by one stress. This would translate as the foot - not the binary branching foot of the metrical notation, which may be subject to embedding within other feet, but the Abercrombian foot which "starts with a stress and contains everything that follows that stress up to, but not including, the next stress" (Abercrombie 1964: 217). Notice, however, that Luick's account may have a strong teleological implication, if it is

interpreted as meaning that a series of diachronic quantitative changes took place in order to attain these 'preferred' or 'ideal' foot formations.

In spite of this, (and particularly since this is not the only interpretation of his account - see below), Luick's observations are not invalid. The important point is that the more unstressed syllables there are to be fitted into a single foot, the shorter the stressed syllable tends to be. Therefore, the restrictions imposed on the structure of primary stressed syllables are the effect of this tendency towards isochronous foot length which is characteristic of stress-timed languages (Abercrombie 1964, Lehiste 1977, Classe 1939). Consider for example, the following observations made by Abercrombie (1964: 217):

English utterances may be considered as being divided by the isochronous beat of the stress pulse into feet of (approximately) even length The quantity of any syllable is a proportion of the total length of the foot within which the syllable occurs, and it is relative to the quantity of any other syllable in the foot It is clear that, since feet are of even length ... the number of syllables in a given foot will have a direct effect on their length.

It has in fact been shown experimentally that the duration of syllables is affected by the number of syllables that are to follow in the same foot (Lindblom 1975; Lindblom and Rapp 1973; Lindblom et. al. 1976). This gives a phonetic basis to the observation that stressed syllable quantity is inversely proportional to quantity (i.e., the number of syllables) within the foot. This may in fact be what Luick means when he puts the adoption of these 'normal' quantities down to a change from a 'logical' to a 'rhythmic' principle of organisation, i.e., the implementation of the foot as a rhythmic unit

in connected speech.

The proposal being made here, therefore, is that as a consequence of this phonetic tendency for inverse proportionality, we get a number of lengthening and shortening processes affecting the vowels of stressed syllables. What they have in common is that their domain is always the foot⁴. The interdependence of vowel length (in the context of the weight of the stressed syllable) and foot structure is evident from the changes themselves: trisyllabic and larger feet are only affected by shortening processes; monosyllables only by lengthening; and bisyllables are subject to both, depending on their syllable structure and other phonetic properties (e.g., the presence of schwa).

As a result of these quantitative processes, we have in ME a set of syllable and foot templates which are different from those which existed in OE and which reflect Luick's 'degrees of quantity'. In effect, the number of possible structures is reduced. These templates do not, however, represent a set of well-formedness conditions which must be attained by all foot structures. They are descriptions of the 'ideal' forms for each type of foot in accordance with the principle of isochrony with its concomitant tendency for the weight of syllables to be determined by the number of syllables in the foot. By ME, we find that a large proportion of the native vocabulary in fact conforms to these structures.

4.5.1

In this Section, I want to introduce the syllable and foot templates of OE and ME and to present a formalisation of the sound changes discussed in Sections 4.1 - 4.3. This will be done using the metrical notation

described in Chapter 1, which I believe to be more appropriate in the analysis of suprasegmental features such as length and stress than the purely linear notation of traditional generative phonology. In this particular case, the metrical notation will be seen to reveal sensitivity to foot structure as the factor common to all these quantitative processes.

4.5.1.1

In his study of the syllabic structure of eOE (700 - 900), Awedyk (1975) proposes, on the basis of his 'dictionary of onsets and codas', that the dominating structure of the OE syllable is:

$$\# \left\{ \begin{array}{cc} (C) & C \\ & \emptyset \end{array} \right\} \quad V \quad \left\{ \begin{array}{cc} C & (C) \\ & \emptyset \end{array} \right\} \#$$

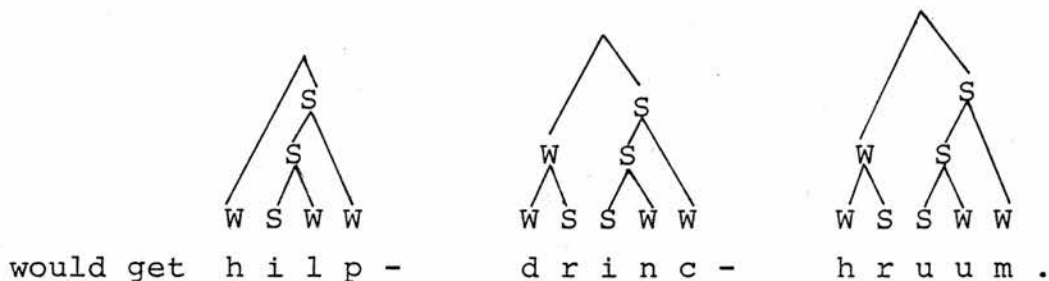
This claim is based on the observation that two thirds of the 89 possible final consonant clusters, and 33 out of 38 of the initial clusters are composed of two consonants. Since the present purpose in looking at these OE clustering constraints is to determine their effect on syllable weight and whether they can be adequately characterised by the syllable template proposed in (1.10), I restrict myself to an examination of final clusters only.

Awedyk's data (which is based on material made available to him by Fisiak from his manuscript "The Consonant Clusters in the History of English") shows that the largest possible final cluster in OE is composed of four consonants. Notably, however, apart from one example - bearhtm 'noise' - the last two consonants of each of these final clusters constitute an inflection

and should perhaps be treated as consonantal affixes as I suggest below.

- (4.25) bilhst 2nd sg of belgan 'to be angry'
hilpst 2nd sg of helpan 'to help'
drincst 2nd sg of drincan 'to drink'
styrfst 2nd sg of steorfan 'to die'

Recall that our syllable template allows us a maximum of one consonant in coda position, and that it was pointed out in Section 1.1.3 that any violations of this length restriction are handled either by the sonority hierarchy or by a rule which handles extrametricality. To review the arguments quickly: any third segment in the rhyme of a syllable will be assigned prominence in one of two ways by conventions which are present in the grammar. If the segment in question is lower in the sonority hierarchy than the preceding segment, it will automatically be assigned a W node. So for example we



If, on the other hand, the extra segment is higher up in the hierarchy, it is predictably a coronal obstruent and is treated as 'extrametrical'.

Kiparsky (1981) notes that such violations are found in ModE, for example exempt, texts, jinxed (although recall that his template allows for three rhyme segments) and suggests that "extra-metrical segments

can be adjoined to the syllable by a segmental analog of the process of 'stray syllable adjunction' already well known to the theory [of metrical phonology M.S.] (Liberman and Prince 1977; Hayes 1980)":

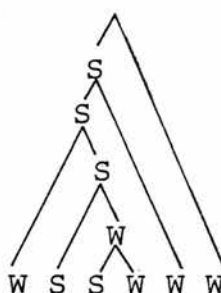
(4.26)



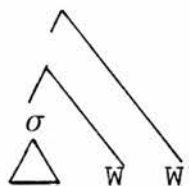
$\sigma [+ \text{cor}] \rightarrow \sigma [+ \text{cor}]$

(Kiparsky 1981: 253-4)

In other words, extrametrical segments are adjoined as W nodes. Notice, however, that these coronal segments are extrametrical adjuncts to the syllable as a whole.

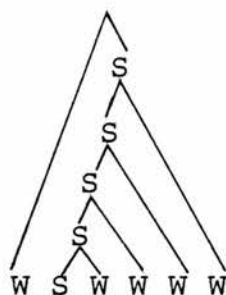


His analysis of jinkst is j i n k s t. By doing this, however, Kiparsky is in fact implying that these segments



are 'outside' the syllable, i.e., σ W W. But if, as has already been argued, the syllable has any phonetic reality, then all its constituents must be below the syllable node. I suggest therefore that extrametrical segments be extensions of the rhyme, i.e., they get sister-adjoined to their left-hand neighbouring constituent.

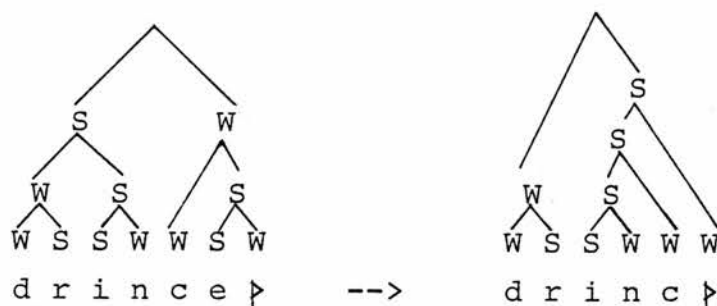
The examples in (4.25) confirm that Kiparsky's claim about extrametrical segments all being coronal, holds for OE too. The syllable structures which will be



assigned to such words is *h i l p s t*. The string of W nodes in the rhyme shows correctly that no sonority relation holds between those segments which violate the hierarchy.

It is notable that the vast majority of these extrametrical segments in OE are inflectional endings, usually the 2nd or 3rd person sg of the present indicative with a syncope vowel: *-eþ* --> *-þ*; *-est* --> *-st*. At the point where inflectional morphology takes place, these inflections would be attached as another syllable. Once the rule deleting the unstressed vowel has operated, syllable structure is adjusted so that the consonantal part of the inflection is drawn into the coda of the preceding syllable. For example

(4.27)

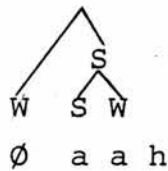


Although such syllable structures violate the sonority

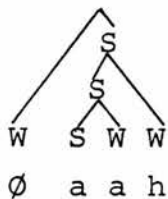
hierarchy, they are still phonetically well-formed, being the result of processes of morphological selection and not therefore being governed by phonological conditions.

If in a synchronic grammar, one does not want to have a deletion rule for the vowels in these inflectional syllables, but simply to add only the consonantal part of the inflection in the morphology, the stages of assignment of syllable structure to, for example, āhst 2nd sg present of 'to own', would be as follows:

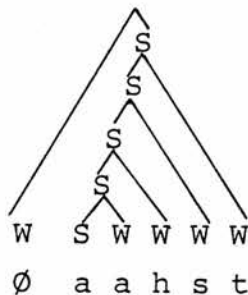
- (4.28) a. assign syllable template (which specifies a light/heavy distinction)



- b. extend it to the right in accordance with the sonority hierarchy

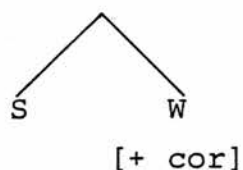


- c. by late rule, the inflectional suffix is attached and assigned structure by the extrametricality convention

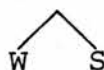


The extrametricality convention may be expressed in the way of a well-formedness condition:

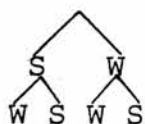
(4.29)



There are, however, apparent violations of the sonority hierarchy where the consonant concerned is not a coronal obstruent, e.g., maðm, bearhtm. The /m/ in each case is more sonorous than the preceding segment and would

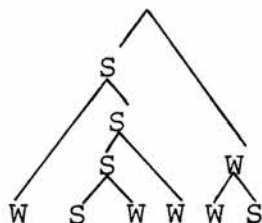


therefore be assigned the structure /m/. In such a context, this segment would be interpreted as a syllabic consonant thereby making the word bisyllabic:



m a ð m. There is therefore no violation.

In bearhtm we find a similar situation except that there is a medial segment which is left unassigned by the template to either syllable. This /x/ is attached as a W node to the first syllable in accordance with the

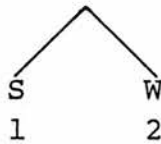


principles outlined above: b e a r h t m.

4.5.1.2

We are now in a position to draw up the syllable and foot templates of OE. The possible foot structures have already been indicated by our analysis of stress patterns in Chapter 2, but let us review them quickly. As discussed (Section 1.2.2) monosyllabic feet occur with a zero syllable to their right, so in fact they have the same binary relational form as bisyllabic feet:

(4.30)

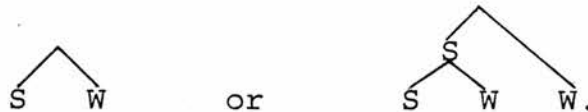


Where 1 is compulsorily filled
and 2 may be filled or zero

For example

	S	W	
	man	∅	'man'
	cild	∅	'child'
	sǣ	∅	'sea'
	we	rod	'troop'
	lī	þan	'to move, travel'
	en	gel	'angel'

Before proceeding further, there is a question of terminology which must be clarified at this point. Until now, 'foot' has been used to describe a metrical structure composed of one terminal S node dominating a syllable with some degree of stress, with (a) sister W node(s) to its right:



As was discussed in Chapter 1, these trees define relative prominence between syllables and the use of 'foot' in LP is informal inasmuch as it simply designates the sub-trees which are erected as a consequence of the application of the stress rule.

In what follows, the term 'prosodic foot' (cf. the different use of this term in Selkirk, 1980) will be used to define a rhythmic constituent in the sense of Abercrombie (1976): the span of utterance from one salient syllable to the next. He differentiates between 'accent' which is a lexical property (i.e., our 'stress') and 'salience' which is found on the first syllable of a foot, i.e., the syllable on which the beat of stress timing falls:

'accent' (is) a potentiality for salience. The salient syllables of an utterance will always, in English, coincide with accented syllables but of course accented syllables are often not realised as salient ones.

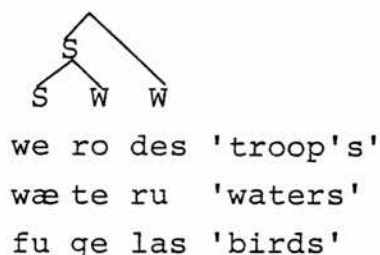
(Abercrombie 1976: 52)

An objection which might be raised at this point is that the data I am considering are words in isolation and any generalisations that can be made about the structure of the prosodic foot cannot be claimed to hold for words too. This, however, is not the case as far as durational properties are concerned. An investigation carried out by Lehiste (1972) concerned with the effect of morphological and syntactic boundaries on the duration of segments in spoken utterances, reveals a number of interesting facts. Measurements were taken of the duration of the base words stick, sleep, shade, speed when each occurred a) by itself; b) followed by a derivational suffix (-y, -er, -ing, -ily, -iness); and c) followed by a word boundary in a short sentence (e.g., the stick fell, the stick is broken, the stick was discarded). She found that in derived forms, the base was durationally shorter than when the base word occurred in isolation and that the reduction was more at the expense of the vowel than the consonants.

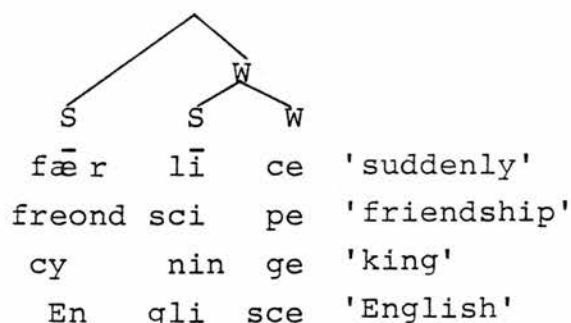
Further, Lehiste's results show that "as far as the temporal structure of utterances is concerned, effects of morphological boundaries and effects of syntactic boundaries cannot be separated from each other the ratios are the same for disyllabic words, consisting of the base plus suffix, and for disyllabic sequences taken from sentences in which the base word is followed by an unstressed syllable..... It appears that the durational structure is conditioned by the number of syllables rather than either by the number of segments or the presence of boundaries." (Lehiste 1972: 2021). I feel, therefore, justified in analysing word-forms in terms of prosodic feet as defined above⁵. (cf. also the discussion of Lehiste (1971), Section 4.3).

In the case of the mono- and bi-syllabic forms cited in (4.30) the size of the prosodic foot happens to coincide with that of the metrical foot. Polysyllabic words, however, show different structures. Consider the examples in (4.31) below:

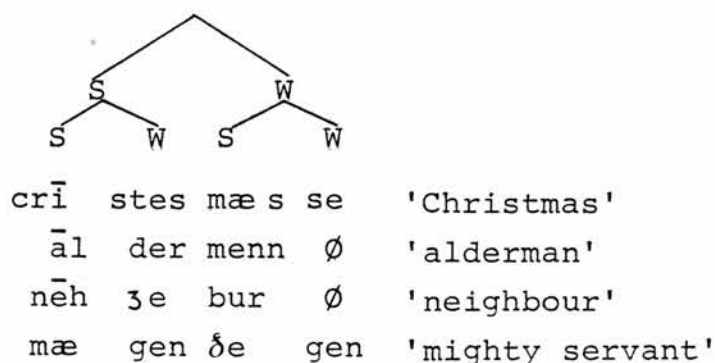
(4.31) a.



b.

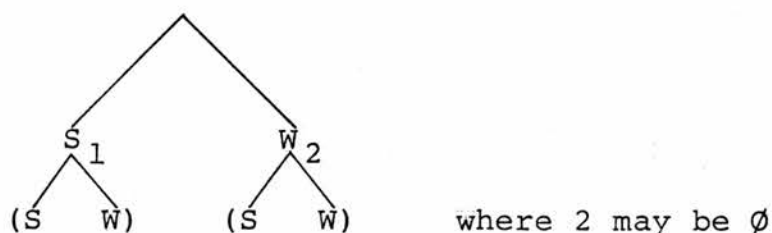


c.

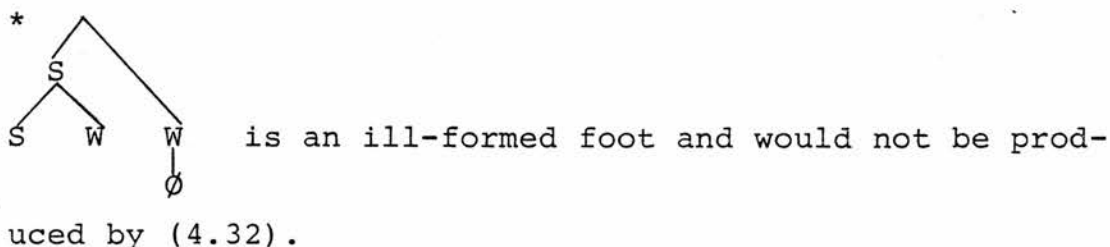


The words in question show differing metrical structures which have been assigned in accordance with the stress rules (cf. Chapter 2). While the single lexical foot of (4.31 a) corresponds to the span of a prosodic foot, (4.31 b and c) show stacked lexical feet within the domain of a single prosodic foot. Each, therefore, regardless of its internal, lexical stress pattern, forms an identical prosodic constituent. These then, are the four common foot structures in OE. They may be collapsed and represented in the form of the template in (4.32).

(4.32) eOE Prosodic Foot Template (i)



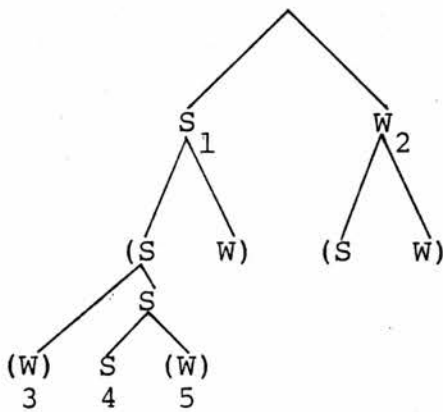
Because of the well-formedness constraints on the occurrence of zero syllables (cf. Section 1.2.2), when 2 is \emptyset , then 1 may not branch above the syllabic level, i.e.,



It would appear that syllable structure in eOE was constrained by little other than the universal template given in (1.10), the sonority hierarchy and language specific clustering constraints. The only additional requirement that must be added applies to monosyllabic lexical items where, due to a sixth century lengthening

process (cf. Section 1.3), the rhyme must minimally be composed of two segments, i.e., it must be a branching (or heavy) rhyme. This constraint does not apply to the stressed syllable of any other foot structure where the rhyme may vary from one to three segments. These details may be incorporated into the Prosodic Foot Template as follows (NB that only the structure of the syllable bearing the primary stress is relevant to us here):

(4.33) eOE Prosodic Foot Template (ii)




conditions:

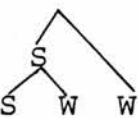
- a) 2 may be \emptyset
- b) if 2 = \emptyset , then 5

This template does not show the maximal syllable structure permitted by each of the different foot structures. There is no need to specify the upper limit on the size of the stressed syllable because this is automatically handled by the existing conventions: a syllable may be extended to the right in accordance with our universal syllable template, the sonority hierarchy, OE clustering constraints and extrametricality.

Although the combination of the template and these conditions would theoretically allow for a heavy syllable

in a  foot, we find very few actual examples of words with such structures. This type of foot is

generally produced by the additional of an inflectional syllable to a bisyllabic foot. But recall the discussion in Section 2.1.1.3 where it was pointed out that in such cases, medial vowels are syncopated after a heavy syllable, e.g., āncor 'hermit' āncres 'hermit's'. There are some examples, however, where the medial vowel has not been lost, or has later been restored: coccele 'tares', hēafodum 'heads', but such cases are in the minority and should perhaps be considered as exceptions. These restrictions on the syllable structure of monosyllabic and non-complex disyllabic feet may be viewed as the earliest instances of the enforcement of the phonetic principle which I have mentioned at a number of points above, namely, that the duration of the salient syllable is dependent on the length of the foot it occurs in. The alternative, of course, to shortening a long syllable in a trisyllabic foot, is to lose one of the syllables altogether with the resulting structure being an acceptable bisyllabic foot. Strikingly then, the only examples of

trisyllabic shortening in  feet are the exceptions mentioned above.

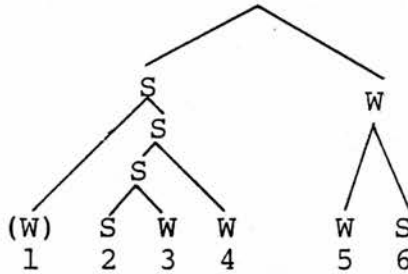
4.5.2

Having established the OE foot template given in (4.33), it is now possible to formalise the processes which affect the quantity of stressed vowels in terms of their prosodic domains. We have seen the various internal structures which a prosodic foot may have and that each of the changes in question occurs in words which are dominated by one such foot. I propose therefore that precluster and trisyllabic shortening and MEOSL are all

changes which share the same domain and may be thus formulated with reference to their specific internal syllable and foot structures. Let us take shortening in bisyllabic forms first. The structural description (SD) for the change in for example, cēpte, mētte, gōd-spell is given in (4.34) below.

(4.34) OE Vowel Shortening I (OEVS I)

SD



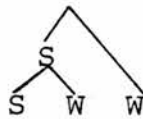
conditions:

a) 2,3 = V

b) 4,5 \neq $\left[\begin{array}{c} \alpha [\text{artic}] \\ \beta \left[\begin{array}{c} \text{phon} \\ - \text{obs} \end{array} \right] \end{array} \right]$ $\left[\begin{array}{c} \alpha [\text{artic}] \\ \beta \left[\begin{array}{c} \text{phon} \\ + \text{obs} \\ + \text{voice} \end{array} \right] \end{array} \right]$

SC 3 => \emptyset

Condition (a) is self-evident: a long vowel must be present - there is no loss of a segment if the constituents



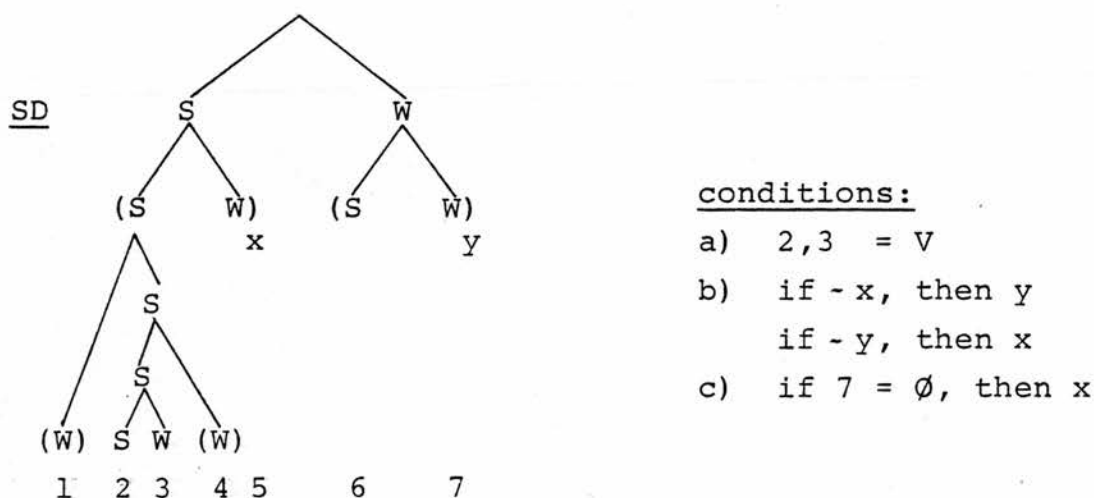
of the syllable are V C C. The second condition is needed in order to prevent this change applying to those vowels which have been lengthened by the homorganic lengthening rule. The structure of the unstressed syllable is part of the SD in order to allow us to express this condition and additionally to prevent the shortening in monosyllabic feet which otherwise would have the

same surface foot structure, i.e., S W, e.g., dāh 'dough', bān 'bone'. Notice, however, that there is one instance where condition (4.34 b) would produce the wrong results, and that is in the case of bræmblas which has an originally long vowel. I think the only way to handle this would be to mark bræmblas as an

exception to condition (4.34 b).

Vowel shortening in prosodic feet of more than two syllables ('trisyllabic' shortening is a misleading label since the process is found in longer words too, e.g., crīstesmæsse, līnetwīze, hlāpewince) may be described in similar terms:

(4.35) OE Vowel Shortening II (OEVS II)



SC 3 => ∅

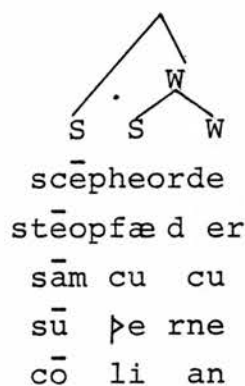
Condition (4.35 a) is present for the same reason as (4.34 a) and the structural change in both (4.34) and (4.35) is identical except that constituent 4 is optional in the latter. Conditions (4.35 b and c) are essential to prevent the stressed syllables of the specified structure undergoing the change in bisyllables and monosyllables, e.g., līpān, brādan, hūs, mæð. This formulation also allows for the shortening in

feet. The operation of this rule would therefore be seen in cases like those in (4.36).

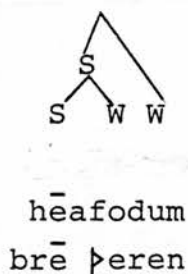
(4.36) a.



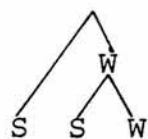
b.



c.



The last two examples under (4.36 a) are permitted by condition (4.35 c) which in effect allows a zero syllable after a trisyllabic form. This condition must be specified in order to prevent the shortening rule applying to words like gefēlness 'feeling', brādness 'broadness', hlēoburgh 'protecting castle', hrōftimber 'material for roofing'. The first two words have a



foot structure where the W node is filled by a zero syllable. The foot therefore only contains two syllables and the shortening rule is prevented from applying by condition (4.35 c) because constituent x is absent. Hlēoburgh and hrōftimber are both compounds, the former with two monosyllabic elements and the latter with one. Their foot structures are given in (4.37):

(4.37)



While both have a foot structure found in the SD of (4.35), neither undergo the vowel shortening process because condition (4.35 c) only allows a zero syllable in constituent 7, i.e., word-finally.

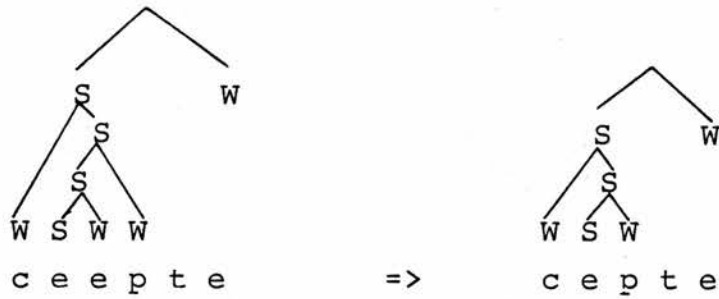
The important difference, however, between the two shortening rules in (4.34) and (4.35) lies in the syllable structures given by the SDs. Where the entire prosodic foot dominates two syllables, the pre-change structure of the stressed syllable must show three segments in the rhyme. A foot containing more than two syllables need only have a single branching rhyme in order for it to be eligible for the SC. Here we see the inverse proportionality tendency in operation: the greater the number of syllables in the prosodic foot, the fewer segments are permitted in the rhyme of the stressed syllable. More specifically, bisyllabic feet surface with stressed rhymes of the form

$\begin{array}{c} \diagup \quad \diagdown \\ S \quad W \end{array}$, while polysyllabic feet have stressed syllables

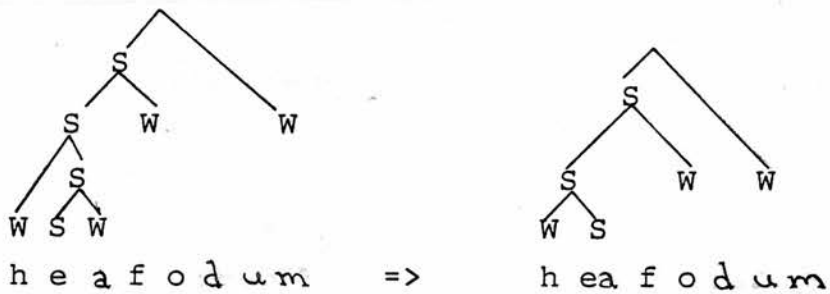
with the structure $\begin{array}{c} \diagup \quad \diagdown \\ \quad S \end{array}$. Notably, $\begin{array}{c} \diagup \quad \diagdown \\ S \quad W \end{array}$ rhymes are only found in the latter type of foot if the consonant occupying the W position cannot be syllabified with the next syllable due to phonotactic constraints; a situation which normally arises through some word-formation process (cf. Section 4.1.1.2). Phonetically, of course, the duration of the vowel may have been further reduced, as is the case in ModE.

Let us now consider the operation of these two OE shortening rules in specific words. In (4.38) I give a number of sample derivations.

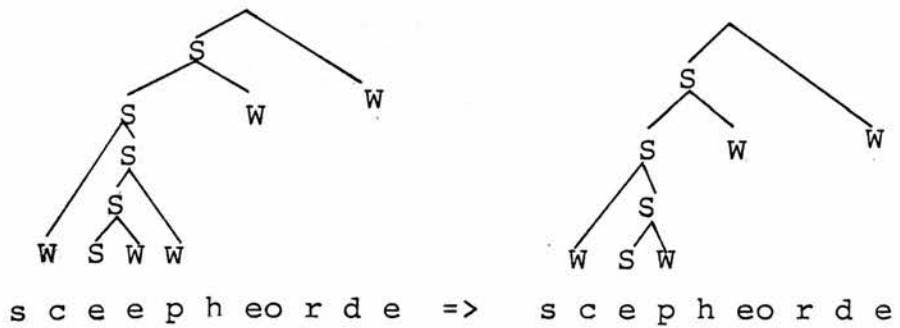
(4.38) a.



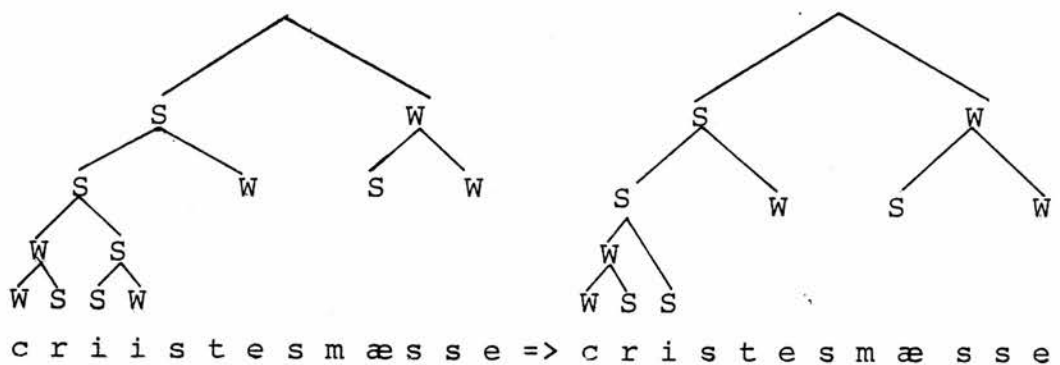
b.



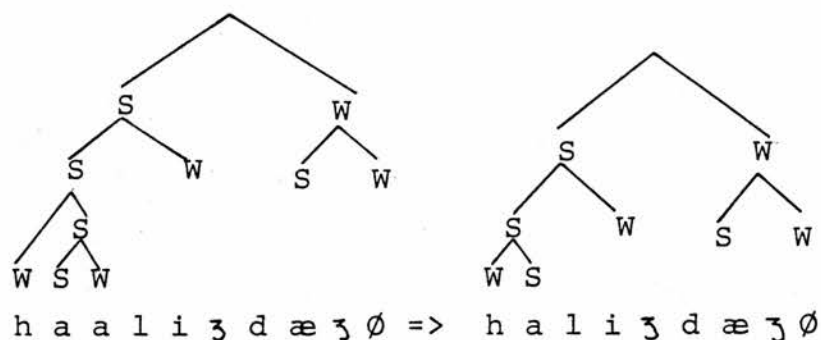
c.



d.

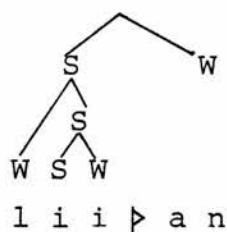


e.

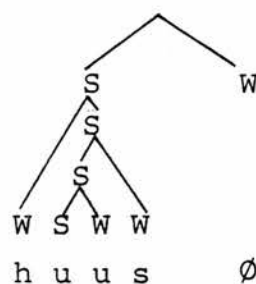


The word in (4.38 a) has been subject to OEVS I while all the remaining examples are due to the various expansions of the SD of OEVS II. Words like līpan are excluded from the latter change because the SD for foot structure is not satisfied as has already been pointed out. It also fails to undergo OEVS I, however, because in this case the syllable structure condition is not met. Similarly, hūs does not meet the SD of this change due to the presence of a zero syllable in the weak sister of the foot (in spite of the fact that the syllable structure is correct for the process).

(4.39) a.



b.



Again our claim that these shortening processes reflect the operation of the inverse proportionality tendency is borne out. The domain for the two changes is the prosodic foot and the SD for shortening depends crucially on both the foot and the stressed syllable structures. As we have seen, it is only when both these structural conditions are satisfied that the rules can operate. Arguably, OEVS I and OEVS II should be collapsable since

the domain common to rules is the prosodic foot. The important factor here, however, is the internal structure of the foot which in turn conditions the structure of the affected syllable. It is, of course, possible to collapse these rules, but so many conditions would have to be specified (e.g., when the foot is of X structure, the the syllable must be Y, etc.) that the formulation of the process would become unduly complex without gaining anything in the generalisation. I feel, in fact, that such a formulation would do more to obscure the interdependence of foot and syllable structure within the prosodic foot, i.e., the inverse proportionality tendency.

4.5.3


I suggested in Section 4.3 that the domain for the operation of MEOSL is also the prosodic foot. Let us now consider this claim and the way in which MEOSL fits into the pattern predicted by our inverse proportionality tendency. The foot structure we are concerned with here is clearly a bisyllabic one with a light stressed syllable followed by an open syllable containing a schwa. We have seen that eOE permits anything from one to three segments in the rhyme of the stressed syllable, but with the shortening process described in the previous section,

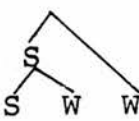


the syllable structure S W W in bisyllabic forms is to a large extent eliminated. This leaves us in lOE with two possible stressed rhymes for such feet:

and e.g., bacan 'to bake' and hātan 'to command'.

Following the present line of argument, (and recall also Luick's degrees of quantity) one might expect the stressed vowel of the former to lengthen in accordance with our phonetic tendency thereby establishing

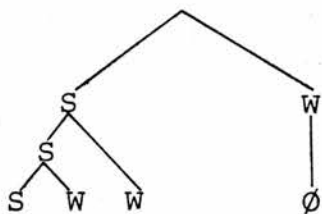
 S W as the 'optimal' structure of the head syllable in bisyllabic feet. (Considering we already have a synchronic situation where monosyllabic feet tend to

have a stressed syllable structure of , and

trisyllabic ones have a  structured stressed rhyme, then if our hypothesis is correct, we may predict

 S W in bisyllabic feet).

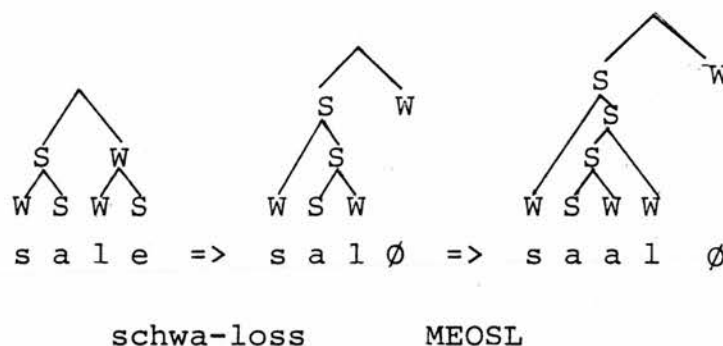
Following Minkova (1982) I proposed (Section 4.3) that we adopt an analysis for MEOSL which shows the relationship between the lengthening of the stressed vowel and the loss of schwa and suggested the simultaneity of the two processes. With the loss, therefore, of the second syllable (i.e., [ə]), the bisyllabic foot becomes monosyllabic with a simultaneous lengthening of the vowel. The resultant structure is

 - the 'preferred' form for this type of foot.


If one does not accept this chronology for MEOSL and schwa-loss, the proposed hypothesis may equally account for lengthening in this context whether the loss of the second syllable precedes or follows the quantity

adjustment. If schwa-loss precedes, then again we have a monosyllabic foot and expect an increase in the weight of the syllable.

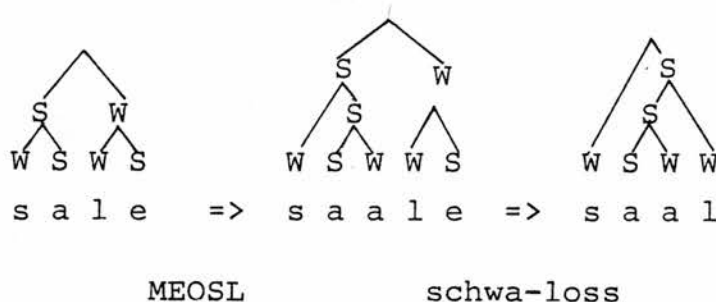
(4.40)



On the other hand, should one propose a chronology where lengthening takes place first, the result (before loss of the schwa) would be the 'optimal'

 stressed rhyme expected in bisyllabic feet. With the subsequent loss of the unstressed vowel, the onset of this syllable gets drawn into the coda of the preceding one automatically producing a well-formed monosyllabic foot.

(4.41)

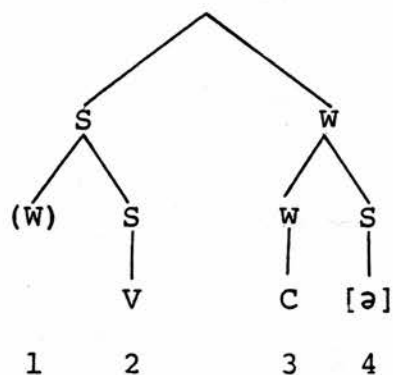


Whichever option one takes, the close link between MEOSL and schwa-loss is evident as the account given here requires no extrinsic ordering. In terms of the prosodic correlations between foot and syllable structure

proposed in this Chapter, however, none of these alternative orderings can account for the absence of lengthening in forms like sadol, shovel, talent, etc. Later in this Section, I suggest a possible way of dealing with these so-called 'exceptions'.

By claiming that the operation of MEOSL works in accordance with a phonetic tendency of inversely proportional syllable and foot duration and is not simply a compensatory lengthening process triggered by the loss of a syllable, we can account for why the vowel in words like kepte does not get lengthened when the schwa is lost. With the shortening of an etymologically long vowel, kepte has the predicted bisyllabic structure. With the loss of [-ə], the resultant monosyllabic foot is also 'optimal' (as in the case of sāl(e) in (4.41) above). Adjustment of the vowel length is therefore not required. As I pointed out in Section 4.3, while Minkova's analysis blocks lengthening in such contexts through the formulation of her SD, it does not explain why it should not take place in these words - after all, the "balance within the foot" would presumably still be "disturbed" with the loss of schwa in these words. The account proposed here, however, predicts not only the lengthening of the stressed vowel in sale, but also the lack of lengthening in kepte; both are a consequence of the quantitative organisation within isochronous prosodic feet.

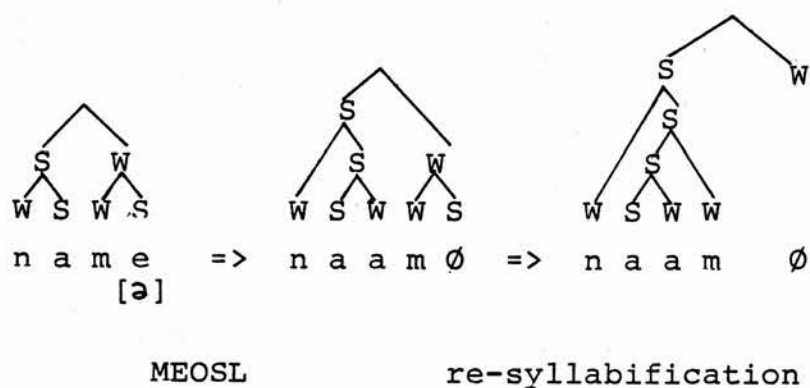
Let us now formalise MEOSL in terms of syllable and foot structure.

(4.42) MEOSLSD

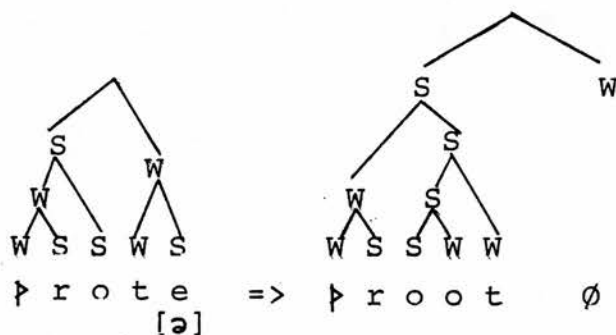
SC 2 => VV
 4 => ∅

Examples of the application of this rule are given below:

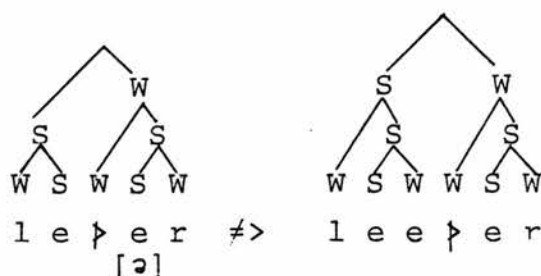
(4.43) a.



b.



c.



The example in (4.43 a) shows the steps in the derivation: after the operation of MEOSL, resyllabification automatically takes place to produce the correct surface syllable structure (cf. the underlying syllabifications discussed in Section 1.1.3). Leper in (4.43 c) does not undergo MEOSL because the SD for the change in (4.42) is not satisfied in that [ə] is not foot-final. In such cases, the rule correctly blocks lengthening. Infinitive forms like ME baken 'to bake' show a lengthened vowel which may be put down to analogy with inflected forms, or may perhaps have been lengthened along with the loss (by the fourteenth century in all areas) of the infinitive inflection. Since the presence of the final /-n/ of this inflection is highly variable by this time, I do not feel there is a strong call to modify the formulation of the SD to accommodate these examples - it seems very probable that in the majority of such cases we again get loss of final schwa (in the South at least). The specification that the second vowel is [ə] is essential to prevent the operation of MEOSL in words like body, poppy, callow (ME bodig, popi, calu) where the word final vowel is not reduced or lost.

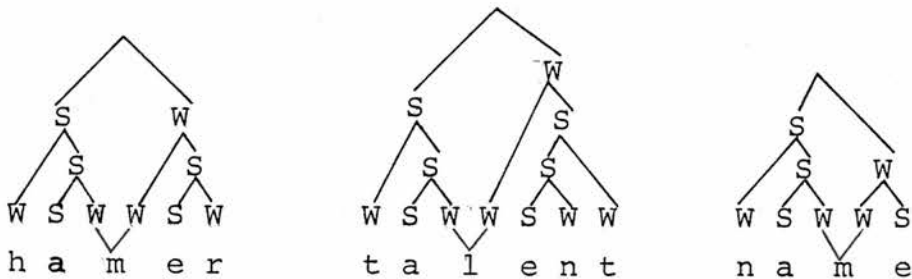
According to the above proposal, the expected 'norm'

for the stressed syllable of bisyllabic feet is $\begin{matrix} \wedge \\ S \quad W \end{matrix}$. There are many bisyllabic forms, however, which under our present syllabification do not have a branching


rhyme, e.g., ME fenel, hamer, talent, barrow, bodig. Their failure to undergo MEOSL has already been accounted for, but since the rhyme only contains one constituent, the inverse proportionality tendency is not fulfilled. It is possible, however, that the rules of syllabification we established for OE no longer hold in ME.

A change in syllabification may have been brought about by the influx of the Romance loan words and in particular the introduction of the RSR. Recall in Section 2.1.2.3 I suggested that OE may have had a late readjustment rule which makes an intervocalic consonant ambisyllabic after a short, stressed vowel (thereby capturing the observation made by Fallows (1981) that stressed syllables tend to be maximal). In lME, this tendency for stressed syllables to be heavy must be reflected in the underlying representation because this is what the RSR makes reference to. It is possible then, that by introducing ambisyllabicity as part of the phonemic representation, some kind of structural uniformity for all stressed syllables could be attained (i.e., all stressed rhymes would be branching). Let us assume that this was the state of affairs as far as lME syllabification is concerned. All consonants in the context $\acute{V}__V$ would be ambisyllabic, e.g., [fe[n]el], [ha[m]er], [ta[l]ent], [na[m]e], etc.

(4.44)



As such, all these bisyllabic words have the 'optimal'

stressed syllable structure:  S W. If this were the case, then MEOSL would have to be seen as a quantitative adjustment in monosyllables necessitated by the loss of [ə] in the second syllable. Forms like hamer do not require a phonemic length adjustment because they already have an acceptable structure. This, of course, does not exclude the possibility of additional phonetic length for the vowels of such words.

The development of new diphthongs in ME through the 'vocalisation' of /j/ and /ɣ/, may be taken as supportive of this proposal for ambisyllabicity in ME.

Examples of this change are ME dai, wei, drawen.

Colman (1983) proposes an account of 'vocalisation' as a process of lenition (in the case of the voiced fricative) to an approximant, followed by nucleation: "a structural change (in which) the approximant allophone moves into the nucleus, and functions as a nuclear non-syllabic, rather than a non-nuclear non-syllabic. Crucially, the re-structuring created by nucleation brings about vocalisation" (p.33). Her analysis depends on a syllable structure where the nucleus may contain more than one element, the second being nuclear but non-syllabic, e.g., the second element of a long diphthong [æ:ɑ].

The account proposes different realisations of /j/ and /w/ (after lenition) depending on their position in the syllable. For details regarding this, the reader is referred to Colman (1983); I simply want to outline the structural change. She claims that the syllable-final allophones of /j/ and /w/ ([j̥] and [w̥]) are phonetically so similar to the vowels /i/ and /u/ that they may be interpreted as such and combine with the preceding nuclear vowel to produce a new diphthong.

Colman argues that it is only by virtue of the fact that ambisyllabic approximant consonants have this non-syllable-initial realisation that they have the potential for vocalisation.

While a syllable-final /j/ may be easily vocalised, e.g., dai, an ambisyllabic /j/ is less likely to do so since it is partially syllable-initial. Colman claims that vocalisation of these ambisyllabic approximants only takes place once they have become syllable-final, i.e., the inflections have been lost. This, however, raises questions about the dating of loss of inflections; why do we find (apparently vocalised - although of course one cannot necessarily identify the occurrence of vocalisation with <i> and <w> spellings -) inflected forms like daies, drawen, bowa, etc?

I see no reason to assume that ambisyllabic /j/ and /w/ should always be realised as the syllable-initial allophones [j] and [w], rather than the syllable-final ones [j̥] and [w̥]. Arguably, their realisation may have gone either way and vocalisation may have taken place while they remained intervocalic and ambisyllabic. If this were the case, then ambisyllabicity is crucial to the analysis of vocalisation in ME bisyllabic forms. Notice that with Colman's argument, this is not the case, since a syllable-initial approximant would automatically become syllable-final on the loss of the inflection: [dæ][jes] --> [dæj].

If the argument for ME ambisyllabicity is accepted, then the syllabification rules would produce structures like those in (4.44). Since the rhymes of the stressed syllables are already branching, there would be no reason to further phonemically increase the duration of the syllable. The lengthening in forms like cradel, acorn,

haven, hasel could be taken as a sporadic phonemicisation of the probably increased allophonic length such short stressed vowel phonemes would have had (but also cf. the possible interpretation of these long vowels given in Section 4.3.2).

4.5.4

The analysis of MEOSL which I have presented in the preceding Section employs the notion of a quantitative balance within the foot (although not in exactly the same sense as Minkova) and also Lass' claim (1984) of there existing 'preferred' structures. I have already pointed to why this analysis has certain advantages over Minkova's, particularly in accounting for why the SD for MEOSL is in exactly the form that it is. Additionally, it does not have the problem of trying to explain the existence of numerous types of feet if there is only one 'preferred' one ($\bar{\sigma}$) as Lass claims.

The analysis presented here admits the acceptability of a number of different foot structures each of which imposes constraints on the structure of its stressed syllable in accordance with established phonetic tendencies. Again, this tendency is one of 'negative correlation' which reflects the isochrony principle of stress-timing (i.e., the duration of the stressed rhyme is adjusted in a way which is dependent on the number of syllables in the prosodic foot). This generalisation can be captured within the framework of metrical phonology because the notation enables us to formalise the lengthening and shortening rules in terms of prosodic domains. Clearly, the principle of organisation which is involved here is one which relates to suprasegmental groupings of constituents. Equally clearly then, segmental descriptions of the changes,

(although they may be adequate as simple descriptions of each process) cannot capture the generalisations which may be made about these quantitative adjustments taken as a whole, with each being the implementation of the same phonetic tendency.

In modern stress-timed languages, the effect of the application of this principle of inverse proportionality is generally realised as an allophonic variation: the duration of a specific vowel is calculated as a percentage of the standard duration for that vowel. Ohala and Kawasaki (1984) quote the findings of Lindblom and Rapp (1973) and Lindblom et. al. (1976) who show that

the duration, D , of a segment is a function of the canonical duration, T , and the number of following syllables, n , according to an equation of the form in (3):

$$(3) \quad D = T/(n + 1)^a$$

(a is a constant that depends on certain phonetic properties inherent to the segment.....). The term $(n + 1)$... is equal to the number of nodes above the given syllable.

(Ohala and Kawasaki, 1984)

So the actual duration of the stressed syllable is a reflection of the number of nodes that dominates it within the prosodic foot (i.e., the number of syllables that follow).

An SPE-type analysis with abstract underlying representations would characterise the change as a lax realisation of a tense vowel (cf. the extreme - extremity type alternation in their analysis of the vowel shift). Because the long/short vowel distinction in ModE involves a qualitative as well as a quantitative difference, a shortened long/tense vowel is realised as its short/lax

equivalent. So, for example, /i:/ --> /I/ (using a transcription like Gimson's (1980) where both length and tenseness are, somewhat redundantly, represented). The kind of shortening we are talking about here is a purely allophonic variation: the difference in the duration of the stressed vowels in choose, choosy, choosily (as a function of the number of syllables that follow) is not realised phonemically.

In OE, however, it would appear that as there was a close qualitative correlation between the long and short vowel phonemes, a sufficient degree of shortening would permit a long vowel to be perceived as, and associated with, the qualitatively equivalent short vowel phoneme. Similarly with a lengthened short vowel. ME maintains this long/short phoneme distinction, but if Luick (1921), Dobson (1962) and Jordan (1974) are correct in claiming that in this period the tense short vowels of OE had become more lax (and hence the lowering which accompanies MEOSL - cf. Section 4.3.1), then we might view the ME vowel system as somewhere between the straight long/short dichotomy of OE and the tense/lax one of ModE. ME, therefore, maintains a phonemic length distinction while developing a phonetic tense/lax one as well. As such, lengthened short, lax vowels (which are consequently somewhat lower than their OE equivalents) are associated with the closest long vowel phoneme, e.g., ME /i/ --> /e:/ ([I] --> [e:]). Therefore, like OE, but unlike ModE, a quantitative change in ME can be phonemically realised.

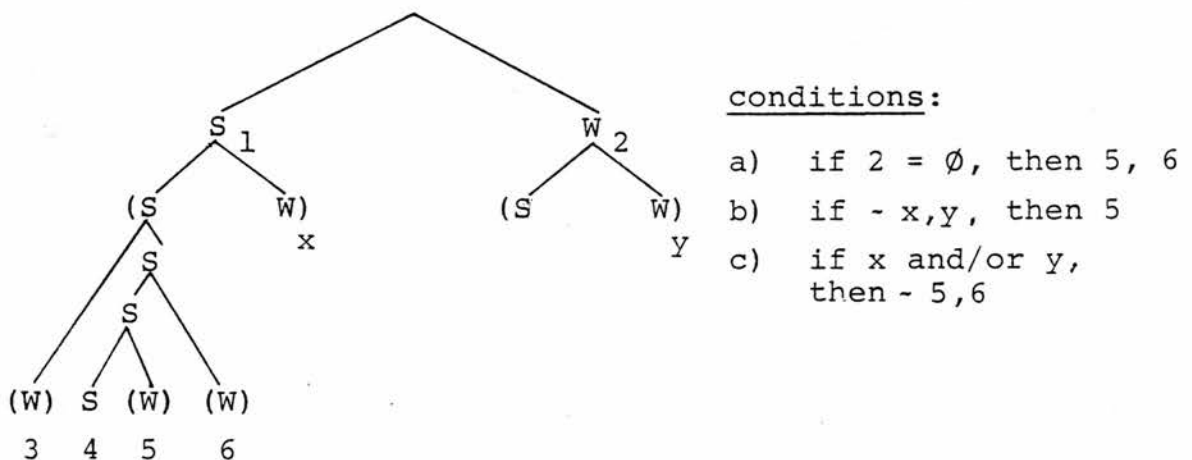
It should therefore be possible to produce a formula which captures the same generalisation as Lindblom and Rapp's, but is phonemically interpretable. Such a formula might be informally stated within the metrical framework as:

(4.45) The Inverse Proportionality Principle

The number of terminal nodes dominating the rhyme of a stressed syllable is inversely proportional to the number of syllables in the prosodic foot.

I have argued that the lengthening and shortening processes discussed in this Chapter are implementations of this tendency towards (roughly) isochronous feet. While homorganic lengthening is determined by a different set of phonetic conditions (namely, the lengthening effect of homorganic nasal/liquid plus obstruent clusters - cf. Section 4.1) and is not therefore an example of this tendency, it nevertheless does not violate it. The domain of the change being a monosyllabic foot, the template allows for a fully expanded syllable together with any extrametrical segments.

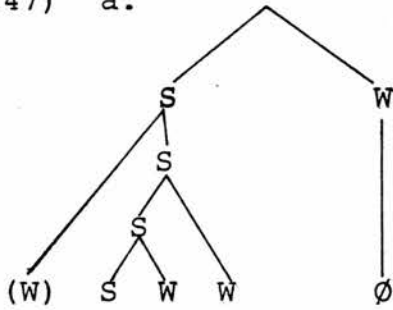
As a result of the quantitative modifications which we have been discussing in this Chapter, the ME Prosodic Foot Template may be characterised as:

(4.46) ME Prosodic Foot Template

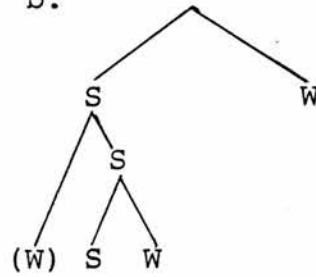
The individual foot templates which are produced by each

of the conditions in (4.46) are given in (4.47) below:

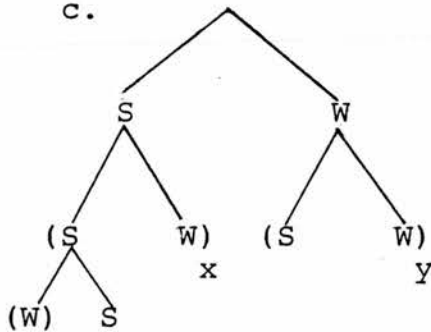
(4.47) a.



b.



c.



where x or y must
be present

The trees in (4.47) show the 'optimal' syllable structure configurations for each type of prosodic foot, in accordance with the tendency found within stress-timed languages for the weight of the stressed syllable to be inversely proportional to the number of syllables within each isochronous foot. A comparison with the eOE Prosodic Foot Template given in (4.33) reveals that the implementation of this tendency produces a far more restricted set of templates which reflect the interdependence of syllable and foot structure.

Appendix

Footnotes

Chapter 1

1. Although of course, many pre-SPE scholars did invoke notions such as the syllable (e.g., Fisher-Jørgensen 1952; Haugen 1956; Pike 1967; Kurylowicz 1948).
2. For discussion of the obligatoriness of onsets in English and German cf. Anderson (1984), Krech (1968), Giegerich (MS. b).
3. Thanks to HG for this idea. For details and further justification of this approach, see Giegerich (MS. a).
4. This principle has often been stated in many forms, cf. for example Pulgram (1970), Kahn (1976), Selkirk (1982).
5. Although some varieties may always syllabify such segments as part of the coda, as is indicated by, for example, the occurrence of syllable-final glottal stops in phrases like
 the cat is still alive,
 [kæʔt]
 there is no sign of the aspiration which would be characteristic of a syllable-initial voiceless plosive.
6. I make no reference to LP's algorithm for converting metrical structure into numerical stress levels (see Kiparsky 1979 and Giegerich 1985 for a discussion). In keeping with the proposals made by Jones (1964, 1977), Gimson (1980) and

Giegerich (1985), only three levels of stress may be read off the metrical structure: primary stress, subordinate stress and no stress. Cf. also Section 2.2.4.

7. As suggested by Donegan in a recent paper delivered at the Fourth International Conference on English Historical Linguistics 1985 (proceedings forthcoming).
8. Giegerich does point out, however, in his summarising comments that the Strength Provision is unnecessary if one adopts a 'template approach'.
9. Giegerich (1985) actually makes this observation with respect to the Zero Syllable Constraint in his Chapter 5.
10. But cf. Giegerich (1985: Chapter 5) in connection with the suggestion that M may not be necessary if tree-construction is level-ordered.

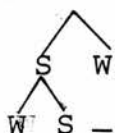
Chapter 2

1. Giegerich cites two alternative theories: firstly that put forward by Jespersen (1926) who argues that "originally" only identical vowels alliterated and that this tradition was spoilt by sound change. But continued use of the old formulae forced poets to abandon this strict vowel alliteration since the qualities of the vowels in such formulae had diversified. The second alternative (cf. Jakobson, 1963) is provided by the convention that the stressed vowels of alliterating consonants are favoured to be dissimilar. When faced with a stressed syllable

without a consonant onset, the poet may have maintained this principle of stressed vowel dissimilarity and abandoned the identical initial-segment alliteration convention. Both alternatives, like the 'glottal catch' one, are untestable.

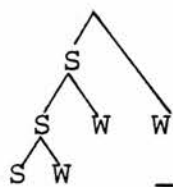
2. This clearly cannot be taken as a universal statement, or even as applying to all Gmc languages (cf. for example, Swedish, Icelandic and Norwegian which have final geminates). We cannot therefore assess the phonemic status of OE geminates solely on the basis of this remark.
3. This is the case except when they occur finally in polysyllables - but this depends, of course on one's syllabification. If extrametricality (Hayes 1981, 1982) or rigorous initial maximalism is part of the theory, then this 'exception' does not arise.
4. Keyser and O'Neil (1983) have also discussed a formulation of the environment for these alternations (which they call high vowel deletion). They propose an analysis based on an initial maximalist syllabification which deletes u in an open syllable after a foot. In this way they can account for word, hūs, werod and hēafdum (< hēafudum) by the same rule. They do not, however, give any justification for their foot formulation rules which seem to be erected with reference to rhyme branching (where a branching rhyme constitutes a unary foot) and not to stress contours. Nonetheless, their rule can account for the data. The problem which they are faced with is the alternation of forms like hēafdu and hēafud: their analysis can only produce the former, i.e., by deletion of the medial u after the unary foot

constituted by the stressed syllable. Notice, however, that our proposal can only produce hēafud because according to the rule in (2.16) inflectional u is only added in the context

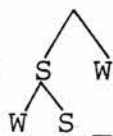


In order to get syncope of the medial vowel, the inflection must be present as in hēafudum --> hēafdum; and since it is not added by the rule in (2.16), we get hēafud in the nom. acc. plu.

Keyser and O'Neil suggest that hēafud be derived in their model through an early trisyllabic shortening of the stressed vowel so that this word is treated like, for example, werod. The analysis presented here would have to change the domain for the addition of u so that it included



alongside



The rule would then

produce hēafudu together with hofu. The alternant form hēafdu would then arise from the deletion of a medial vowel after a heavy syllable in a trisyllabic form (in the same way as the examples in (2.17 a)). This is not, however, the place to discuss the merits of the two analyses as the main issue I was concerned with in bringing up these cases was the definition of a heavy syllable as -VC. Neither the examples discussed in this footnote, nor the analysis of Keyser and O'Neil provide counter-evidence to this claim.

5. Cp. orchestra which seems to be an isolated case where /st/ does not attract stress in a context where one would expect it to do so.

6. John Anderson has pointed out that the variant behaviour of [s] plus plosive clusters is predictable from ambisyllabicity. If we take the Anderson and Jones' definition of a weak cluster (i.e., S([)C')) as defining a light syllable too, then the examples in (2.22) can be accounted for because each would have two ambisyllabic consonants, thereby making the stressed syllable heavy: cea[st]er, sweo[st]or would thus be grouped with dēo[f]ol and wun[d]or, rather than with we[r]od which would have a light initial syllable by virtue of the fact that the vowel is immediately followed by a single ambisyllabic consonant. In the case of the words in (2.23), however, the relevant bracket would be the syllable initiating one (i.e., [) so that while cēp[t]e has three segments in the rhyme of the stressed syllable, mā[st]e has only two. It is claimed therefore that an ambisyllabic analysis can predict the unusual behaviour of such clusters because, since they are the only instances of an ambisyllabic cluster rather than an ambisyllabic segment, they may make a syllable heavy or light through a convention which allows rules to sometimes refer to their initiating and sometimes to their terminating boundary.

I am not sure, however, that this is not simply a convenient notational trick. One might equally argue that since such [s] plus plosive clusters are the only ones which are ^{not} mirror images of themselves in initial and final positions (excluding, of course, final syllabic sonorants) they may

sometimes be syllabified as syllable codas and at others as onsets, despite the operation of the initial maximal principle of syllabification. In fact, as an initial cluster, /st/ for example violates the sonority hierarchy since /s/ is more sonorous than /t/. The situation may be resolved in one of two ways in order to satisfy the conditions of sonority: either the cluster is syllable-final (where the /t/ may be extrametrical since it is [+coronal]), or else the boundary may fall between the two segments. Both syllabifications would account for the ceaster cases, but not for mæste where they would predict shortening. Notice, however, that what we have is a conflict of rules: the Law of Initials demands onset status for these clusters, while the sonority hierarchy will only be satisfied if at least one of the segments is in the coda of the preceding syllable. The rather mixed situation we find in OE seems to reflect analyses which accord with one of these principles in some cases, and with the second in others.

7. Alternatively, this rule of post-stress ambisyllabicity could, in a synchronic grammar, be ordered at a level subsequent to the one at which the prosodic length adjustments discussed in Chapter 4, take place. This would allow certain phonological rules to make reference to initial maximal bracketing, while others (cf. Colman (1983) on vocalisation and Colman (MS) on i-umlaut), are sensitive to ambisyllabicity.
8. Breaking in eall, feorr, etc. where the geminate is in final position, can be handled by ordering this rule before the rule of degemination at word bound-

aries. The underlying syllabification would be the same as that for midd (discussed later in this Section) with breaking being an early rule.

9. Exceptions may be examples like næddre, blæddre from the gemination of /t,d/ before /r/. It is arguable, however, that the /r/ is syllabic in this context, in which case geminates are permissible between terminal S nodes.
10. Since this rule does not assign structure to a single entire word (recall that unstressed prefixes do not receive metrical structure by this rule and in fact in connected speech, constitute part of the structure assigned to a preceding word), a more appropriate name for it might be the 'OE Lexical Footing Rule', for example. I propose, however, to retain the 'Word Rule' in line with the bulk of literature which deals with similar phenomena.
11. It is not clear whether, even in ModE, we need both boundaries and level ordering, cf. Mohanan (1982), Kiparsky (1982).
12. It might also be possible to suggest a hierarchy of environments conditioning fricative voicing, such that the presence of a following vowel may over-ride the blocking effect of a morpheme boundary, as for example in bysig.
13. To avoid confusion, the term 'stress' will be reserved for linguistic prominence. 'Accent' will be used when metrical prominence is meant.
14. The transformationalist tradition does continue, however. See for example, Levi (1978).

15. But see Kiparsky's (1982) discussion of this matter. Also, this is debatable with respect to OE - a point which has already been mentioned in Section 2.2.2.2 and which I shall return to with regard to compounds in Section 2.2.4.
16. Allen says that in apparent exceptions to the IS A Condition, e.g., loud-mouth, turtle-neck, the problem is not with the derivation of compounds, but rather their use as names of things: "a compound which characterises a thing by naming one of its outstanding qualities can come to act as the name for that thing" (p.11, fn.2). The list of 'exceptions' is rather large, however, including all exocentric compounds, suggesting that perhaps Allen's condition should be reformulated.
17. The only examples I have come across with three elements are sumerrædingbōc 'summer lectionary' and cildamæssedæg 'children's mass-day', so I do not make special provision for them.

Chapter 3

1. In this Chapter, particularly when referring to early writers on stress, I will retain their use of the terms pretonic, tonic and post-tonic, where the tonic syllable is the one which bears the primary stress.
2. I do not wish to enter into a discussion of the phonetic value of this vowel - see Pope (1934: paragraph 275).
3. Cf. Nakao (1984) who talks about such "double-stressed" forms and proposes an interpretation

similar to the one which I outline in this Chapter. His analysis, however, is couched within the HK/SPE framework and fails to capture the observations which will be discussed here.

4. Exactly what may be defined as a "distinguishable" prefix is discussed in Section 3.1.2.3.
5. Where paroxytone = penultimate, pro-paroxytone = antepenultimate and ox^ytone = final stress.
6. These examples are cited in Dobson (1957: Chapter X) to whom the reader is referred for details and references.

Chapter 4

1. Homorganic lengthening before /rn,rl,rd,rθ,rs/ (where the last two are realised as [rð] and [rz] respectively) was sporadic, and the lengthened vowels were subsequently shortened in most words.
2. Following Hempel and Oppenheim (1948), Rescher (1963), Achinstein (1971).
3. It is not clear what Luick means by 'normal', presumably 'statistically dominant'. But if this statement is based on an observation of the end results of the quantity-changing processes, then the argument becomes circular. My account does not have this problem because we can claim that the tendency to inverse proportionality is 'normal' in English and that these changes (or their results) simply reflect this tendency.
4. Recall Section 4.1 where I stated that homorganic

lengthening should not be considered as being due to the implementation of the inverse proportionality tendency like the other quantitative changes discussed here. At the same time, however, its effects are in keeping with the structures predicted by this tendency. So although the phonetic conditions for homorganic lengthening are different from those for the other changes, the results of the former still reflect the principles of isochrony and foot structure which will be outlined.

5. Note that the domain I am considering is not that of Selkirk's (1980) prosodic word, which dominates a sequence of prosodic feet within the "simple (nonbranching) stem a level of morphological structure in English smaller than the syntactic word" (p.570). Nor is it the same as LP's node M which spans the length of a syntactic word. The domain of the foot under discussion here, begins with a primary stress (i.e., a salient syllable) and thus excludes any unstressed prefixes (unlike LP) but includes all suffixes and inflections (unlike Selkirk).
6. I use the notation introduced by Lass and Anderson (1975) in grouping features into two gestures (articulatory and phonatory), and using Greek variables to indicate the identity of complete gestures.

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